

CADDISFLIES OF HISPANIOLA, WITH SPECIAL REFERENCE TO THE DOMINICAN REPUBLIC
(INSECTA: TRICHOPTERA)OLIVER S. FLINT, JR.¹
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ABSTRACT

The caddisfly fauna of the Greater Antillean island of Hispaniola, comprised of the nations of the Dominican Republic and Haiti, is reviewed in light of large, new collections. As a result 109 named species are reported from the island, of which 86 or 80% are endemic to it. For comparison, Cuba has 90 named species, Jamaica 52, and Puerto Rico 42. Thirty-two species or subspecies are described and figured as new: *Austrotinodes labiatus*, *Cariboptila mathisi*, *C. paradoxa*, *Helicopsyche parahageni*, *H. melanochaeta*, *H. poliochaeta*, *H. septifera*, *Atopsyche himmlus*, *A. orientalis*, *A. peravia*, *A. thomasi*, *Streptopsyche rawlini*, *S. praecipua*, *Smicridea brunnescens*, *S. duarte*, *Alisotrichia bisetosa*, *A. woodruffi*, *A. ultima*, *Metrichia longispina*, *Ochrotrichia baoricoensis*, *O. larimar*, *O. obovata*, *O. seiba*, *Oxyethira geminata*, *O. scopulina*, *Oecetis haitises*, *Setodes auonalus*, *Marilia valga*, *Chimarra spinulifera baoruco*, *Cernotina danieli*, *Polycentropus pedernales*, and the description of *Neotrichia bifurcata* by Harris is also included. *Oxyethira simulatrix cubana* is reduced to synonymy with its nomotypical form and *Marilia nigrescens* is raised to full specific status. A number of unassociated females, 4 of which assuredly represent undescribed species, are mentioned. Synonymies, distributions and new collection data are provided for most species.

KEY WORDS: Trichoptera, new species, synonymy, distribution, Dominican Republic, Haiti, Hispaniola

INTRODUCTION

Two republics are situated on the Greater Antillean island of Hispaniola, the Dominican Republic on the eastern end and the Republic of Haiti on the western. The land area of the Dominican Republic is 48,442 sq km with a population of over 8 million, while the Republic of Haiti is about half as large with 27,750 sq km but with a population equally as large. The entire island is south of the Tropic of Cancer thus making it technically Tropical, but its climate is moderated by the surrounding seas.

Hispaniola at 76,192 sq km is the second largest Greater Antillean island after Cuba at 114,525 sq km, but much larger than Jamaica at 11,580 sq km or Puerto Rico at 8,865 sq km. In terms of elevation, the highest peak in the Greater Antilles is Pico Duarte in the Dominican Republic at 3,174 m. Blue Mountain Peak is highest on Jamaica at 2,252 m, Pico Turquino at 1,999 m is the highest point on Cuba, and Cerro de Punta at 1,338 m is the highest point on Puerto Rico. There are three primary mountain ranges in the Dominican Republic: the Cordillera Central, with Pico Duarte, is the largest and highest and continues as a series of massifs across

northern Haiti forming its northern arm; the Cordillera Septentrional follows the north coast of the Dominican Republic north of the Valle del Cibao; and the Sierra de Baoruco is found in the southwestern margin of the Dominican Republic and continues westward in Haiti as the several massifs of its southern arm. To the north of the Sierra de Baoruco is the depression of Enriquillo with its lake surface at about 40 m below sea level. This depression is bordered to the north by a lesser range, the Sierra de Neiba, which extends across central Haiti.

Geologically the island is very complex, being formed of several terranes accreted since the Late Cretaceous through the Cenozoic (Donnelly, 1988, Lewis and Draper, 1990). Some of these, such as the Sierra de Baoruco and Sierra de Neiba, are mostly limestone with few surface streams but with numerous large springs at their lower levels. The Cordilleras Central and Septentrional are of much more mixed origin with metamorphic and even extrusive rock, which is conducive to many more streams and rivers, especially at higher elevations.

TRICHOPTEROLOGICAL INVESTIGATIONS

The first caddisflies from the island were described by Walker in 1860. In addition to *Chimarra (Curgia) braconoides*, a species still recognized, he described

Phryganea divulsa and recorded *Limnephilus griseus*. The latter two species were apparently mislabelled: *P. divulsa* is a synonym of the North American *P. cinerea*

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and *L. griseus* is European. Hagen described *Helicopsyche* (as *Notidobia*) *lutea* in 1861, a species still recognized although no new examples of this are known with certainty. August Busck of the NMNH collected insects in the Dominican Republic in 1904, including a few very rare caddisflies. His locality "S.[an] Francisco Mts." has been a puzzle to most workers but was worked out by Rehn and Hebard (1927). No further species were described until the work of Banks. In a series of three papers (1924, 1938, 1941) he described nine species from the island, the majority of which were collected by P.J. Darlington during his coleopterological work on the island (the type of *Limnephilus toussianti* Banks 1924 was reportedly from Haiti, but the species recently has been found by Ruiter 1995 to be a synonym of the Mexican *L. solidus*). Flint made a collecting trip to the island in 1969, the results of which were augmented by trips of his coworkers, the Davises in 1973 and the Spanglers in 1984. Subsequent field work by Flint and Mathis in 1995 and 1999 has added even more material, but these collections have not been worked in a coherent manner, although individual species and genera have been described. In 1979 Botosaneanu made a trip to

Haiti and in 1995 he collected the Dominican Republic extensively. The results of these expeditions were manifest in three papers: Botosaneanu 1991a, 1995, and 1996. Between 1987 and 1995 Rawlins and his coworkers at the Carnegie Museum made 6 collecting trips to the island resulting in many thousands of specimens. Woodruff of the Florida Department of Agriculture and the Florida State Collection of Arthropods made many trips to the island in the last 20 years, primarily to collect scarab beetles, but the light traps he operated also collected many caddisflies. In addition to the species described from the island, another 16 species described from other Antillean islands or the mainland have been recorded from Hispaniola up to now. The Dominican amber also contains a variety of caddisfly species, 22 species having been described in the last 15 years.

The island's caddisfly fauna was summarized in 1999 by Flint and Pérez-Gelabert. They listed 77 extant species, plus the 22 in Dominican amber, placed in 26 genera in 11 families. More recently Botosaneanu (2002) published an annotated checklist of the caddisflies of all the Caribbean islands, including Trinidad and Tobago.

FAUNISTICS

This study enumerates 109 named species of recent caddisflies for the island, and an additional 22 species are known from Dominican amber. A number of still-unassociated females or larvae are found in the collections; some may be the opposite sex of species known only from males, but four are certainly still-undescribed species in the genera *Macrouena*, *Smicridea*, *Oxyethira* and *Xiphocentron*. It would seem reasonable to expect another 20 to 50 species exist on the island, especially considering the largely uncollected northern highlands of Haiti.

Of these 109 species, 87 or 80% have been taken only on Hispaniola. Another 12 species, 11% more, are limited to Hispaniola and one or more of the other Greater Antillean islands, thus 91% of the insular fauna is endemic to the Greater Antilles. Another four species, or 4%, also range only into the Lesser Antilles, and the final six species, 6%, also include a continental component in their range. Within the Greater Antillean islands, 15 species also are found on Cuba (three only on these two islands), 12 also on Jamaica (none on these two islands only), and 13 on Puerto Rico (five on these two islands only). The greater number of species restricted to Hispaniola and Puerto Rico compared to Hispaniola and Cuba may be a result of the still very poorly known fauna of Cuba, especially from Oriente.

The Hispaniolian fauna, now 109 species, may be compared to that of Cuba, 90 species (Flint, 1996b), Jamaica, 52 species (Botosaneanu and Hyslop, 1998), and Puerto Rico, 42 species (Flint, 1992). More undescribed

species are known from all of the Greater Antillean islands, but it is reasonable to expect that the proportions will remain about the same, with the two largest islands containing twice as many species as Jamaica, which will have 10–20 species more than Puerto Rico. The major Lesser Antillean islands will probably support about as many species as Puerto Rico. The two best known islands, Guadeloupe and Dominica, each are known to contain almost 40 species, with the other, more poorly known islands, only recording numbers from 13 to 22 (Flint and Sykora, 1993). The fauna of Trinidad and Tobago is quite different from that of the Lesser Antilles, being more closely related to the continental fauna, as would be expected from their geological history (Flint, 1996a).

All except one of the species ranging outside the Greater Antilles are Hydroptilidae, the microcaddisflies. These are very small insects, most only a few millimeters in length. It is proposed that they are easily carried by the winds between the islands and the mainland. The last widely distributed form, which may be a complex of cryptic species, *Oecetis incoospicua* (Walker), is of wide ecological tolerance, being known from lentic and lotic waters over North, Central, and South America. It is suggested that the ecological tolerance of this species permits it to find suitable breeding sites whenever it is wafted to new regions. The majority of caddisflies are a bit too large to be carried easily by winds and/or have more restricted ecological tolerances that make colonization of new regions very difficult.

MATERIAL STUDIED

Although the majority of the material studied comes from three institutions, all material available to us has been included in this survey. Material from this study may be found in the following institutions.

AMNH—American Museum of Natural History, New York, NY, USA
 CMNH—Carnegie Museum of Natural History, Pittsburgh, PA, USA

FCSA—Florida State Collection of Arthropods, Gainesville, FL, USA
 MCZ—Museum of Comparative Zoology, Cambridge, MA, USA
 NMNH—National Museum of Natural History, Washington, DC, USA
 ZMUA—Zoölogisch Museum, Universiteit van Amsterdam, Amsterdam, The Netherlands

SYSTEMATIC ENTOMOLOGY

Family Calamoceratidae
 Genus *Phylloicus* Müller

This genus is limited to the New World where it is widely distributed. It enters the United States only in the southwestern tier of states, but is then generally distributed far into southern Chile, and over both the Greater and Lesser Antilles. The larvae and their distinctive, flat cases made of leaf fragments placed in dorsal and ventral rows are well known (Flint, 1968a, Wiggins, 1996). They feed by shredding plant material in more slowly flowing sections of streams.

Phylloicus iridescens Banks

Phylloicus iridescens Banks, 1941:397, fig. 12 [♂]. Flint, 1967:18, figs. 85, 86 [♂, lectotype]; Botosaneanu, 1996:20 [distribution].
Phylloicus superbus Banks: Botosaneanu, 1996:21.

This species appears to be endemic to the Dominican Republic. It is usually found at intermediate and higher elevation in the mountains. In coloration it is quite variable (although less variable at a given site). The typical form has two narrow, golden bands across the forewing, the outermost not reaching the posterior margin of the wing. In some material the bands are even narrower, and the outer band is reduced to a small, comma-shaped mark from the anterior margin, and some have even lost the outer band totally. The types and other recorded material were from the Province of La Vega; we here add Dajabón and Monseñor Nouel.

Material Examined.—DOMINICAN REPUBLIC. **Dajabón Province:** 13 km S Loma de Cabrera, 20–22 May 1973, D. & M. Davis, 3♂, 2♀ (NMNH). **La Vega Province:** 20 km S Constanza [on road to Valle Nuevo], 3–7 June 1969, Flint & Gómez, 3♂, 2♀ (NMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 1♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 6♂ (FSCA, NMNH). Arroyo El Dulce, Jarabacoa-Manavao, Cordillera Central, 26 April 1995, L. Botosaneanu, light, 1♀ (ZMUA). **La Vega-Monseñor Nouel Provinces:** Loma el Casabito, summit, 19°03'N, 70°31'W, 1390 m, 19–23 November 1992, Rawlins et al., 1♂ (CMNH). **Monseñor Nouel Province:** 1 km E Paso Alto de Casabito, 7 km NW La Ceiba, 19°02'N, 70°29'W, 1130 m, 28 July 1992, Rawlins et al., 1♀ (CMNH). [not La Vega Province as labelled], 6 km [not mi as labelled] NW of Rt. 1 on rd. to Constanza, 27 June 1998, Woodruff & Baranowski, 3♂, 1♀ (FSCA).

Phylloicus pulchrus Flint

Phylloicus pulchrus Flint, 1964:65, fig. 18 A–L.
Phylloicus superbus Banks: Botosaneanu, 1996:21, fig. 54 [♂, mis-identification of material from Dominican Republic].

This species was described from Puerto Rico and is here recorded from Hispaniola for the first time. The Hispaniolan examples have been compared side-by-side with the Puerto Rican material and found to agree in coloration (and in its variations) as well as male genitalia. The species is widespread over the island from foothills to the high sierra. It is here recorded from the Provinces of Barahona, Dajabón, Elias Piña, El Seibo, La Vega, Monte Plata, and Pedernales.

Material Examined.—DOMINICAN REPUBLIC. [**Barahona Province:** San Rafael, 8.3 km S of Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 11 May 1995, Flint, 1♂ (NMNH). Nr. Filipinas, Larimar Mine, 6–11 July 1993, Woodruff, 1♂ (FSCA). **Dajabón Province:** 13 km S Loma de Cabrera, 20–22 May 1973, D. & M. Davis, 2♂, 1♀ (NMNH). **Elias Piña Province:** 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 1♂ (NMNH). **El Seibo Province:** Loma Cocuyo, 6 km N Pedro Sánchez, 18°55'N, 69°07'W, 475 m, 4 July 1992, Rawlins et al., 1♂ (CMNH). **Independencia Province:** La Descubierta, 18°34.1'N, 71°43.8'W, 0 m, 25 March 1999, Flint, 1♀ (NMNH); same, but 6 May 1995, L. Botosaneanu, light, 1♂ (ZMUA). **La Vega Province:** Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 1♂ (NMNH); same, but 19–21 May 1995, 1♂, 1♀ (NMNH). 5 km SSE Jarabacoa, 640 m, 25 July 1987, Rawlins, 1♂ (CMNH). **Monte Plata Province:** Arroyo Los Verros, Sierra de Agua, 29 April 1995, L. Botosaneanu, light, 2♀ (ZMUA). **Pedernales Province:** Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 17 July 1992, 230 m, Rawlins et al., 3♂, 1♀ (CMNH). Stream & falls, 19 km N Pedernales, 230 m, 18°09.2'N, 71°44.8'W, 19 March 1999, Flint, 3♂ (NMNH).

Family Ecnomidae
 Genus *Austrotinodes* Schmid

This genus is found exclusively in the New World, where it is the only member of its family. One group of species is limited to the Chilean Subregion, while a second group is widespread outside of this subregion from Texas to Uruguay (Flint, 1973). Species are known from Cuba, Tobago and now Hispaniola in the Antilles. Larvae and pupae of species in this genus have been described a number of times (Bowles, 1995, Flint, 1973, Wiggins, 1996). The larvae probably construct silken shelters attached to rocks in the bottoms of the streams wherein they live.

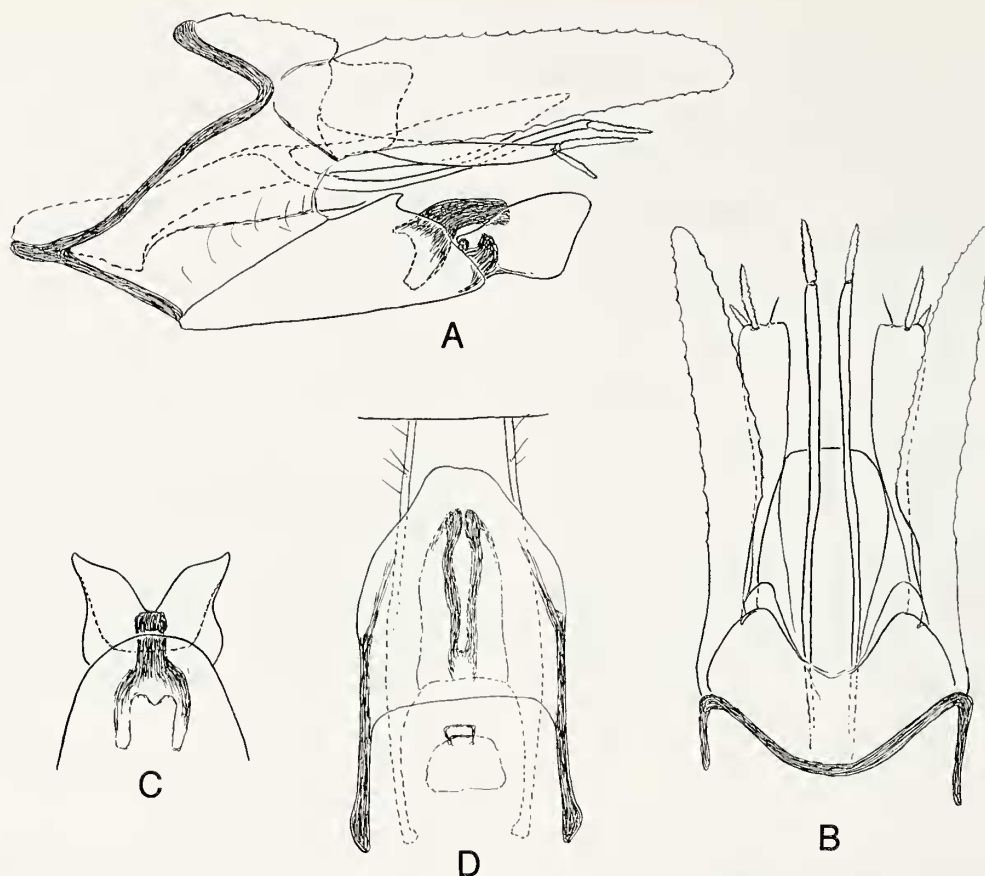


Fig. 1.—*Austrotinodes labiatus* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendages, ventral. Female genitalia: D, Ventral.

Austrotinodes labiatus Flint and Sykora, **new species**
(Fig. 1)

Austrotinodes species Kumanski, 1987:11 [mention of undescribed species from Dominican Republic]. Flint and Denning, 1989:109 [♀ listed].

Males of this species were discovered in one of the final lots examined, although the females were known from the beginning of the study and the description originally prepared based on this sex. The males show the species to be closely related to those from Mexico and Central America, especially *A. sedmani* Flint known from Guatemala to Costa Rica. They differ in the structure of the intermediate and inferior appendages. The females are very similar to *A. cubanus* Kumanski from Cuba, which is known from only a few females. They are related as shown by the configuration of the eighth sternum and basal structures of the ninth segment. They may be easily distinguished by the shape of these basal structures of the ninth segment: in *A. cubanus* they are shorter and open wider apicad, while they are longer with the apices almost touching in *A. labiatus*.

Adult Male.—Length of forewing, 4 mm. Color in alcohol, brown. Genitalia: Ninth segment deeply divided laterally, sternum elongate, apical margin in ventral

aspect convex. Preanal appendage long, tapering apicad, apex rounded, surface setose, margins crenulate. Intermediate appendage slender, long, tip bearing two elongate spines; in dorsal aspect broadened apicad, apex with single spinose seta visible in addition to two elongate spines. Phallic guide heavy, black, slightly angled in middle, in ventral aspect with basal portion bifid. Inferior appendages fused basomesally, broadened apicad, posterior margin slightly oblique; in ventral aspect deeply divided mesally, flared laterad. Phallus with sclerotized base and membranous apex; dorsolaterally bearing one long, slender process on each side terminating in elongate spine.

Female.—Length of forewing, 4.5 mm. Color silvery gray; head and thorax with silvery hair, antenna cream-colored; forewing mostly grayish with darker brown spots, especially along basal half of costal margin. Genitalia: Eighth sternum strongly produced mesally, apex variable (in some examples nearly truncate others more tapered); produced into short anterolateral apodemes. Ninth sternum very long and tapering with two pairs of slender lateral sclerites bearing scattered, long setae; basally (beneath eighth sternum) with elongate, complex structure with narrow slit-like opening mesally

between pair of darkened, lip-like sclerites approximate apically. Vaginal sclerite hemispherical with small collar mesally on posterior border.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC**, **Pedernales Province**: Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al. (CMNH). Paratypes: Same data, 1♂, 6♀ (CMNH, NMNH). **Elias Piña Province**: 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 1♀ (NMNH). **Hato Mayor Province**: Parque Los Haitises, E of Trepada Alta, 12 km W El Valle, 18°59'N, 69°30'W, 145 m, 6 July 1992, Rawlins et al., 2♀ (CMNH).

Family Glossosomatidae
Genus *Campsiophora* Flint

The genus is a Greater Antillean endemic and is placed in the subfamily Protoptilinae, as are all the Antillean genera. A species is known from Cuba, another from Jamaica, and the following from both Puerto Rico and Hispaniola. The larva, pupa and case was described for *C. pedophila* Flint, the type species, when it was described originally (Flint, 1964).

Campsiophora pedophila Flint

Campsiophora pedophila Flint, 1964:15, figs. 3 D–F, H–I, K–M [♂, ♀, larva, pupa, case]. Botosaneanu, 1991a:116 [Haiti]; Botosaneanu, 1995:6 [Dominican Republic].

This species was described from Puerto Rico and more recently recorded from Haiti and the Province of La Vega in the Dominican Republic. The species is here recorded also from the Provinces of Azua, El Seibo, La Altagracia, Monseñor Nouel, Monte Plata, Pedernales, Puerto Plata, and San Cristobal, which would indicate its widespread occurrence over low and intermediate elevations on the island.

Material Examined.—**DOMINICAN REPUBLIC**, **Azua Province**: Río Las Cuevas, 8 km NE Padre Las Casas, 19°46'N, 70°53'W, 580 m, 7 August 1990, Rawlins & Thompson, 2♀ (CMNH); same, but 3–4 October 1992, 9♂, 37♀ (CMNH). **Sec. Canoa**, Mirador de la Presa, Jaqui del Sur, 30 September 1978, Woodruff, 2♀ (FSCA). **Elias Piña Province**: Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 3♂, 39♀ (FSCA). **El Seibo Province**: Pedro Sánchez, small stream, 10 June 1976, Woodruff, 20♂, 17♀ (FSCA, NMNH). **La Altagracia Province**: La Laguna Nisibón at Río Maimón, 18 June 1998, blacklight, Woodruff & Freytag, 100♂♂♀♀ (FSCA, NMNH); same, but sweeping, 1♂, 5♀ (FSCA). 2 km E Nisibón, Río Nisibón, 12 June 1986, Woodruff & Stange, 5♂ (FSCA). **La Vega Province**: Jarabacoa, 3–4 June 1969, Flint & Gómez, 10♀ (NMNH). Río Camú, 19 km NE of Jarabacoa, 3–4 June 1969, Flint & Gómez, 1♂, 6♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 7 May 1995, Flint, 4♀ (NMNH). Río Baiguarte, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 100♂♂♀♀ (NMNH, CMNH); same, but 19–21 May 1995, 13♂, 64♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 6♀ (NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 2♀ (FSCA). **Monseñor Nouel Province**: Bonao, Hotel Jacaranda, 27–28 June 1998, blacklight, Woodruff & Baranowski, 100♂♂♀♀ (FSCA, NMNH). **Monte Plata Province**: Bayaguana, 22 August–2 September 1991, Brown, 7♀ (FSCA). **Pedernales Province**: Río Mulito, 21 km N Pedernales, 280 m, 18°09.3'N, 71°45.6'W, 16 May 1995, Flint, 1♀

(NMNH); same, but 18 March 1999, 10♀ (NMNH); same, but 20 March 1999, 6♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 1♀ (CMNH). Stream & falls, 19 km N Pedernales, 230 m, 18°09.2'N, 71°44.8'W, 19 March 1999, Flint, 29♀, plus 1♂ metamorphotype (NMNH). 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 2♂, 7♀ (FSCA). Km 21, N Cabo Rojo, 1200 ft [365 m], 1 July 1998, Woodruff & Baranowski, 2♀ (FSCA); same, but 19 June 1976, Woodruff, 4♀ (FSCA). Km 24, N Cabo Rojo, 3000 ft [915 m], 11 June 1998, Woodruff & Freytag, 8♀ (FSCA); same, but 2 July 1998, Woodruff & Baranowski, 7♀ (FSCA). **Puerto Plata Province**: Río Camú, 14 km E Puerto Plata, 17 May 1995, Flint, 2♀ (NMNH). [**San Cristóbal Province**: at or near Naranjo Dulce, 13 km N San Cristóbal], S. Francisco Mts., 27 September [1905], Aug. Busck, 2♀ (NMNH). [**Province unknown**]: Dominican Republic, intercepted Miami, 13 November 1986, Agr. # 87-265, 1♀ (NMNH).

Genus *Cariboptila* Flint

As is the case with the preceding genus, this too is limited to the Greater Antillean islands and is a member of the Protoptilinae. The type species is found on Puerto Rico, another species on Jamaica, three species are known from Cuba, and now five species from Hispaniola, all recorded only from the Dominican Republic. The larva, pupa, and case of *C. orophila* Flint from Puerto Rico have been described (Flint, 1964).

Cariboptila aurulenta Flint

Cariboptila aurulenta Flint, 1974:7, fig. 35–37 [♂]. Botosaneanu, 1996:8 [Dominican Republic].

The species was originally described from La Vega Province, and later recorded from two more localities in the same province (Botosaneanu, 1996). One more lot has now been seen, but from close to the known localities.

Material Examined.—**DOMINICAN REPUBLIC**, **La Vega Province**: La Cienega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 29♂, 70♀ (FSCA, NMNH, CMNH).

Cariboptila caab Botosaneanu

Cariboptila caab Botosaneanu, 1996:8, figs. 1–6 [♂, ♀].

This species was recently described from two localities (perhaps even identical) on the Río Mulito in Pedernales Province, and springs in La Descubierta in Independencia Province. An old collection from Elias Piña Province is here recorded, as well as new material from Barahona Province and from, and near to, the old sites.

Material Examined.—**DOMINICAN REPUBLIC**, **Barahona Province**: Río Nizaito, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint, 1♂ (NMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 2♂, 1♀ (CMNH). **Elias Piña Province**: 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 13♂, 14♀ (NMNH). Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 2♂ (FSCA). **Independencia Province**: La Descubierta, 18°34.1'N, 71°43.8'W, 0 m, 25 March 1999, Flint, 1♂ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 150 m, 18°34.7'N, 71°37.7'W, 25 March 1999, Flint, 7♀ (NMNH). **Pedernales Province**: Río Mulito, 21 km N Pedernales, 270 m, 18°09.3'N, 71°45.6'W, 18 March 1999, Flint, 31♂, 91♀, plus 1♀ metamorphotype (NMNH); same, but 20 March 1999, 9♂, 27♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m,

17 July 1992, Rawlins et al., 1♂, 6♀ (CMNH). Stream & falls, 19 km N Pedernales, 230 m, 18°09.2'N, 71°44.8'W, 19 March 1999, Flint & Mathis, 18♀ (NMNH).

Cariboptila calcigena Flint

Cariboptila calcigena Flint, 1974:8, fig. 41–43 [♂].

This species has been taken only in the Central Cordillera, in the Province of La Vega. Another old collection has been identified recently.

Material Examined.—DOMINICAN REPUBLIC. [La Vega Province]: Constanza, 3–4,000 ft [915–1220 m], August 1938, Darlington, 1♂, 1♀ (MCZ).

Cariboptila hispaniolica Flint

Cariboptila hispaniolica Flint, 1974:8, fig. 38–40 [♂]. Botosaneanu, 1996:8 [Dominican Republic].

This species has been taken at a number of localities, all of them in the Cordillera Central, Province of La Vega, and now Azua and Elias Piña. Association of females by genitalic characters permits the addition of more examples to the original series.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 1♀ (CMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 51♂, 153♀ (FSCA). **La Vega Province:** Convento, 12 km S of Constanza, 6–13 June 1969, Flint & Gómez, ♂ holotype, 1♂ paratype, 11♀ (NMNH); same, but 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 2♀ (NMNH). Jarabacoa, 3–4 June 1969, Flint & Gómez, 1♀ (NMNH); same, but 9 Jan 1985, Munroe, 3♂, 6♀ (NMNH); same, but 13 November 1984, Spangler et al., 3♂, 12♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°00.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 6♂, 13♀ (NMNH). Río Baiguat, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 10♂, 12♀ (NMNH); same, but 19–21 May 1995, 2♂, 4♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 100's ♂♂ ♀♀ (NMNH). La Cienega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 13♂, 60♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 12♂, 24♀ (FSCA). La Cienega. Río Yaque del Norte, 19°51.68'N, 70°51.68'W, 3640 ft [ca. 1110 m], 29 July 1999, S. Peralta, 8♀ (NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 100's ♂♂, ♀♀ (FSCA). Near mouth Arroyo Las Dajaos, 5 km E Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 7♂, 4♀ (CMNH). Constanza, 27 April 1978, Woodruff & Fairchild, 2♀ (FSCA). El Arroyazo, Reserva Científica Ebano Verde, 19°1.93'N, 70°32.62'W, 18 September 1999, Perez & Bastardo, 9♀ (NMNH).

Cariboptila mathisi Flint and Sykora, new species

(Fig. 2)

This previously undiscovered species was taken at two nearby localities crossing the road (rt. 12) from Carretera Duarte as it ascends the first long grade to the west on the way to Constanza. The species is related to both *C. hispaniolica* Flint and *C. caab* Botosaneanu. From both it is distinguished by the shapes of the ninth and tenth tergal lobes and process, and the phallic complex with its digitate ventrolateral lobe and especially by the pair of long, curved, black spines arising basally in the complex.

Adult Male.—Length of forewing, 3 mm. Color fuscous; forewing fuscous with reddish tinge and two small, white spots on posterior margin at mid- and 3/4 length. Sixth sternum with broad, mesal, nail-like lobe. Genitalia: Ninth segment with anterior margin slightly produced at midheight; with pair of dorsolateral rods; with dorsomesal, knoblike lobe from posterior margin. Tenth tergite elongate and broad in lateral aspect, with numerous, mesal, setate-processes and lobes in dorsal aspect and scale-like flap from base of inner face. Phallic complex with lateral plate elongate, with setate processes; from posterodorsal margin a long, terete process, sinuate in lateral aspect; internally with pair of long, curved, black spines in ventral portion, another pair of spines above basal section with basolateral point in dorsal aspect; centrally with pouch bearing small, black spines.

Female.—Length of forewing, 2 mm. Color similar to male.

Type Material.—Holotype, male: DOMINICAN REPUBLIC. **Monseñor Nouel Province:** 8.7 km W Bonao [jct. Carretera Duarte and rt. 12], 19°01.8'N, 70°29.4'W, 890 m, 10 May 1995, W.N. Mathis (NMNH). Paratypes: Same data, 5♂ (NMNH, CMNH); same, but 6.3 km W jct., 19°01.2'N, 70°28.8'W, 670 m, 6 May 1995, 1♀ (NMNH).

Cariboptila paradoxa Flint and Sykora, new species
(Fig. 3)

A single female of an unknown species from the Province of Barahona signaled the presence of yet another undescribed species. Fortunately the collections made in 1999 obtained several series containing both males and females of this most remarkable species. It is the only species of the genus or even tribe Protoptilini in which secondary sexual modifications are described in the male.

Adult Male.—Length of forewing, 2.5–3.5 mm. Color uniformly brown, legs a bit paler. Head in frontal aspect (Fig. 3D) with large rectangular area ventrad of median ocellus shining white and smooth. Antennae attached to dorsolateral angles of white area, insertions widely separated; scape slightly compressed, bearing numerous short, broad, black setae on mesal face, flagellar segments for half length of antenna bearing similar setae on inner face. Fifth sternum with dark, arcuate ridge from anterolateral angle, across venter to other angle; sixth sternum with posteromesal point. Abdomen dorsolaterally with three pairs of finger-like, eversible, membranous lobes between segments 5 and 6, 6 and 7, and 7 and 8 (lobes disappear in clearing and are seldom seen in alcoholic material). Genitalia: Ninth segment with anterior margin convex, with lightly-sclerotized structure projecting anteriorly from dorsum; dorsum developed into a pair of depressed, concave plates projecting posteriorly. Tenth tergite with numerous, small, setate-processes and lobes. Phallic complex with lateral plate slightly flared laterad, and posteroventral plate with two black, knobs, ventral-most bearing two large, black setae; internally with pair of long, curved, black spines in ventral portion, another pair

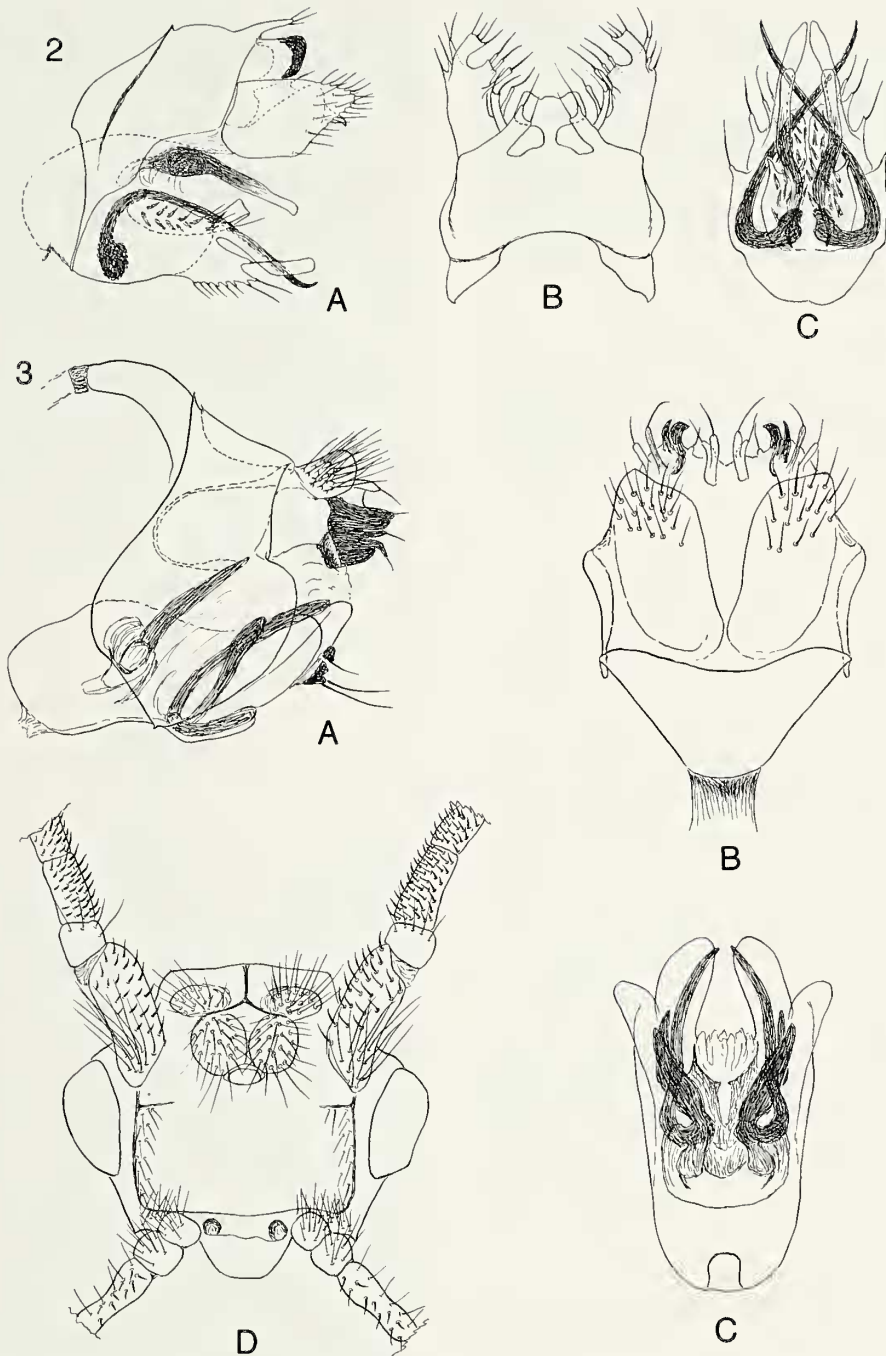


Fig. 2.—*Cariboptila mathisi* new species, male genitalia: A, Lateral. B, Dorsal. C, Phallic complex, ventral.

Fig. 3.—*Cariboptila paradoxa* new species, male genitalia: A, Lateral. B, Dorsal. C, Phallic complex, ventral. D, Head, frontal.

of spines arising near base of first pair and curving dorsolaterally around them, third pair of spines arising more basad from convoluted basal sclerite; centrally with membranous pouch extending from basolateral, sheathing sclerite.

Female.—Length of forewing, 2.5–3.5 mm. Color similar to male. Genitalia: Fifth and sixth sterna as in

male. Eighth sternum heavily sclerotized, bearing one long, straplike sclerite projecting posteriad between ninth sternites. Ninth sternum divided into a pair of strongly-sclerotized plates, each with anteromesal angle rounded and inner margin very heavily sclerotized. Vaginal sclerite ovoid, with central keyhole-like opening; with pair of internal sclerotized, ringlike structures in segments 5/6.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Independencia Province:** La Deseubierta, 18°34.1'N, 71°43.8'W, 0 m, 25 March 1999, O.S. Flint (NMNH). Paratypes: Same data, 3♂, 6♀ (NMNH, CMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, O.S. Flint, 9♂, 11♀, plus 6♂, 1♀ metamorphotypes (NMNH). **Barahona Province:** Río Nizaito, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, O.S. Flint, 1♂ metamorphotype (NMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 15♂, 6♀ (CMNH). Confluence of Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 1♀ (CMNH).

Genus *Cubanoptila* Sykora

The genus is known from five extant species described from Cuba, one species from Jamaica, and three fossil species described from Dominican amber (Wichard, 1989, 1995a).

Family Helicopsychidae Genus *Helicopsyche* Siebold

The genus is very widespread over the world, found in all major faunal realms. In the New World it is found from southern Canada into southern Chile and all the larger Antillean islands. The genus was recently subject to a thorough phylogenetic study (Johanson, 1998) with the result that all the New World species are placed in two subgenera, *Cochliopsyche* which was previously considered a full genus, and *Feropsyche* a new taxon for all the New World species. Many species are found on all the islands of the Greater Antilles: Cuba, nine species; Hispaniola, ten species; Jamaica, three species; Puerto Rico, four species. They are also well represented in Dominican amber, three species having been described (Johanson and Wichard, 1996)

The larvae are well known, being the maker of the coiled, snail-shell formed case of sand grains (Flint, 1968a; Wiggins, 1996). Some Antillean species produce helical cases or snail-shell cases made almost purely of silk (Botosaneanu, 1991a, fig. 61). The larvae feed on the periphyton that they scrape off the substrate (Resh et al., 1984).

Helicopsyche (Feropsyche) altercoma Botosaneanu and Flint

Helicopsyche altercoma Botosaneanu and Flint, 1991b:178, figs. 8–16 [♂, ♀, wings]. Botosaneanu, 1991b:66, figs. 7–9 [♂, wings]; Botosaneanu, 1996:22 [distribution]; Johanson, 2002:16, fig. 5 [♂, wings].

This species has many sexual modifications in the male. The brushes of long, silky hair from the inferior appendages and dark androconia on the undersurface of the forewings have been noted before. In addition, the basal segment of the maxillary palpus has a tuft of long hairs that curve up along the face and into cephalic grooves, just as for *H. melanochaeta* n. sp. (Fig. 5E).

It is a common and widespread species on the Dominican Republic, at least in the western half of the

country, reported from the provinces of Dajabón, Elias Piña, La Vega, and San Cristobal. We here add Azua, Independencia, and Monte Cristi.

Material Examined.—**DOMINICAN REPUBLIC. Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 19°46'N, 70°53'W, 580 m, 7 August 1990, Rawlins & Thompson, 6♂, 5♀ (CMNH); same, but 3–4 October 1991, Rawlins et al., 37♂, 49♀ (CMNH). **Dajabón Province:** 9 m S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 1♂, 2♀ (CMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 13♂, 48♀ (FSCA). **Independencia Province:** La Descubierta, 18°34.1'N, 71°43.8'W, 0 m, 25 March 1999, Flint, 1♂ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 1♂, 4♀ (NMNH). Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 2♀ (NMNH). **La Vega Province:** Convento, 12 km S of Constanza, 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 9♂, 24♀ (NMNH). Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 29♂, 146♀ (NMNH); same, but 19–21 May 1995, 3♂, 42♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 7♂, 25♀ (NMNH). Near mouth Arroyo Los Dajaos, 5 km SE Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 18♂, 49♀ (CMNH). **Monte Cristi Province:** Monte Cristi, 4 June 1986, Müller & Stange, 1♀ (FSCA).

Helicopsyche (Feropsyche) dominicana Botosaneanu and Flint

Helicopsyche dominicana Botosaneanu and Flint, 1991a:200, figs. 10–16 [♂, ♀]. Botosaneanu, 1996:22 [distribution]; Johanson, 2002:118, fig. 60 [♂, wings].

This very small species does not have any apparent secondary sexual modifications of the maxillary palpi, head, wings or abdomen. It is known from La Vega and Pedernales Provinces, and we add Azua, Baoruco, Dajabón, Independencia, Monseñor Nouel, and Peravia Provinces, all on the western half of the country.

Material Examined.—**DOMINICAN REPUBLIC. Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 19°46'N, 70°53'W, 580 m, 7 August 1990, Rawlins & Thompson, 1♂ (CMNH); same, but 3–4 October 1991, Rawlins et al., 6♂, 2♀ (CMNH). **Baoruco Province:** Sierra de Neiba, Los Guineos on upper Río Colorado, 18°35'N, 71°11'W, 630 m, 11–12 August 1990, Rawlins & Thompson, 1♂, 2♀ (CMNH). **Dajabón Province:** 9 mi S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 15♂, 22♀ (CMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 263♂, 177♀ (FSCA). **Independencia Province:** La Descubierta, 18°34.1'N, 71°43.8'W, 0 m, 25 March 1999, Flint, 6♂, 4♀ (NMNH). **La Vega Province:** Convento, 12 km S of Constanza, 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 1♂, 2♀ (NMNH). Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 7♂, 27♀ (NMNH); same, but 19–21 May 1995, 1♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint & Mathis, 113♂, 24♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°00.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 1♂ (NMNH). 2.5 km SW Piñar Bonito, 18°51'N, 70°43'W, 1430 m, 26 November 1992, Rawlins et al., 47♂, 24♀, 1 w/o abdomen (CMNH). Near mouth Arroyo Las Dajaos, 5 km E Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 59♂, 29♀ (CMNH). La Cienega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 3♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 7♂, 3♀ (FSCA). La Cienega, Río Yaque del Norte, 19°51.68'N, 70°51.68'W, 3640 ft [ca. 1110 m], 29 July 1999, S. Peralta, 1♂, 4♀ (NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 29♂, 31♀

(FSCA). **Peravia Province:** 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, 5–6 August 1990, Rawlins & Thompson, 15♂, 100♀ (CMNH). [**Monseñor Nouel Province**, not La Vega Province as labelled], 6 km [not mi as labelled] NW of Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 4♀ (FSCA).

Helicopsyche (Feropsyche) parahageni

Flint and Sykora, **new species**

(Fig. 4)

Helicopsyche hageni Banks: Botosaneanu, 1996:21 [♀, Dominican Republic, **misidentification**].

At first sight this species appears to be identical to *H. hageni* Banks from eastern Cuba. However, when cleared male genitalia of the two species are compared side-by-side, numerous differences become apparent. The most noticeable are those of the inferior appendage which is proportionately more slender and elongate basally. The mesobasal lobe is also more elongate, especially in posteroventral aspect where the mesal side is prolonged rather than almost squarely truncate as in *H. hageni*. The anterolateral angle of the ninth segment is also more nearly truncate with the lateral apodeme curved strongly ventrad with no dorsal branch. The tenth tergum is broadly rounded apically in lateral view and the apex emarginate mesally; the apicomeral arms from the tenth tergal apodeme are paired, but only single in *H. hageni*. There are no striking secondary sexual modifications in the male.

Adult Male.—Length of forewing, 3.5–4 mm. Color uniformly golden brown, paler ventrally. Maxillary palpus two segmented, bearing elongate, dark, enlarged hairs, short at apex of palpus, becoming more elongate at base of apical and entirely over basal segment. Antenna with flagellar segments encircled subapically by band of short, erect setae (producing serrate-appearing antenna). Abdominal membrane between terga and sterna with long, thin hair, especially on segments 5 & 6; third and fourth sterna barely reticulate, setal bases with large pale spots; sixth sternum lacking mesal process. Genitalia: Ninth segment narrow ventrally; anterior margin broadly produced at midheight, lobe truncate; with lateral brace strongly curved ventrad. Tenth tergum long, broadly rounded apically in lateral aspect; in dorsal aspect with apex emarginate mesally, with V-shaped, mesal apodeme, produced to apex as pair of dark marks, each side with irregular row of dark setae. Cercus ovoid. Inferior appendage narrow basally with long, gradually widening lateral section, broadened and curved posteriad dorsally, dorsal margin rounded with scattered spinose setae; apicodorsal angle pointed; in posteroventral aspect with mesal face bearing scattered spinose setae; mesobasal lobe well developed, prominent in both lateral and posterior aspects, with scattered spines. Phallus long, slender, enlarged basally, with small, C-shaped, internal, phallosomal sclerite.

Female.—Length of forewing, 4 mm. Color light brown, slightly darker than male. Abdominal membrane between terga and sterna of segments 3 & 4 covered with

long, thin hair. Abdomen otherwise as described by Botosaneanu 1996, p. 21, fig. 55.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, [Barahona Province]**: San Rafael, 8.3 km S of Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 11 May 1995, O.S. Flint (NMNH). Paratypes: Same data, 19♂, 19♀ (NMNH). Confluence of Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 163♂, 360♀ (CMNH, NMNH, FSCA). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 19♂, 151♀ (CMNH, NMNH). Río Nizaito, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, O.S. Flint, 5♂, 22♀ (NMNH). **Independencia Province:** Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, O.S. Flint, 6♂, 3♀ (NMNH). **Pedernales Province:** Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 117♂, 103♀ (CMNH). Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, O.S. Flint, 2♂, 2♀ (NMNH); same, but 18 March 1999, 5♂, 4♀ (NMNH); same, but 20 March 1999, 2♂, 8♀ (NMNH).

Helicopsyche (Feropsyche) haitiensis Banks

Helicopsyche haitiensis Banks, 1938:296, figs. 16, 20 [♂], Ross, 1956:398 fig. 7 [♂]; Flint, 1967:24 [lectotype]; Johanson, 2002:69, fig. 33 [♂].

Helicopsyche haitiense Banks: Botosaneanu and Flint, 1991a:203, figs. 17–21 [♂, invalid emendation]; Botosaneanu, 1991a:134 [distribution].

No new material of this species has been seen. The type series is all male, and examination of the pinned specimens reveals no apparent secondary sexual modification of the maxillary palpi, head, wings or abdomen.

Helicopsyche (Feropsyche) kalaom Botosaneanu

Helicopsyche kalaom Botosaneanu, 1996:22, figs. 58–61 [♂], Johanson, 2002:103, fig. 52 [♂, wings].

This recently described species was known only from La Vega Province, we now add the provinces of Peravia and Pedernales. The males have a distinct tuft of long hair arising from a pocket in the male basal maxillary palpal segment. However, there is no apparent modification of the head.

Material Examined.—**DOMINICAN REPUBLIC, La Vega Province:** La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 1♂, 6♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 1♂, 2♀ (NMNH). Bayacanes, 120 m, 24 July 1987, Rawlins & Davidson, 2♀ (CMNH). **Peravia Province:** 3 km SW La Nuez, tributary to Río Las Cuevas, 18°40'N, 70°36'W, 1870 m, 5–6 August 1990, Rawlins & Thompson, 1♂, 3♀ (CMNH). 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, 5–6 August 1990, Rawlins & Thompson, 10♂, 4♀ (CMNH, NMNH). **Pedernales Province:** 31 km NNE Cabo Rojo, 18°07'N, 71°35'W, 1345m, 27 September 1991, Rawlins et al., 3♂, 2♀ (CMNH, NMNH).

Helicopsyche (Feropsyche) lutea (Hagen)

Notidobia lutea Hagen, 1861:271.

Helicopsyche lutea (Hagen): Hagen, 1866:254; Ross, 1952:35 [lectotype]; Flint, 1967:24 [discussion]; Botosaneanu and Flint, 1991b:181, figs. 17–20 [♀]; Johanson, 2002:138, fig. 72 [♀].

There is no good match for this species in any of the new material. The paratype was cleared to see if it differed

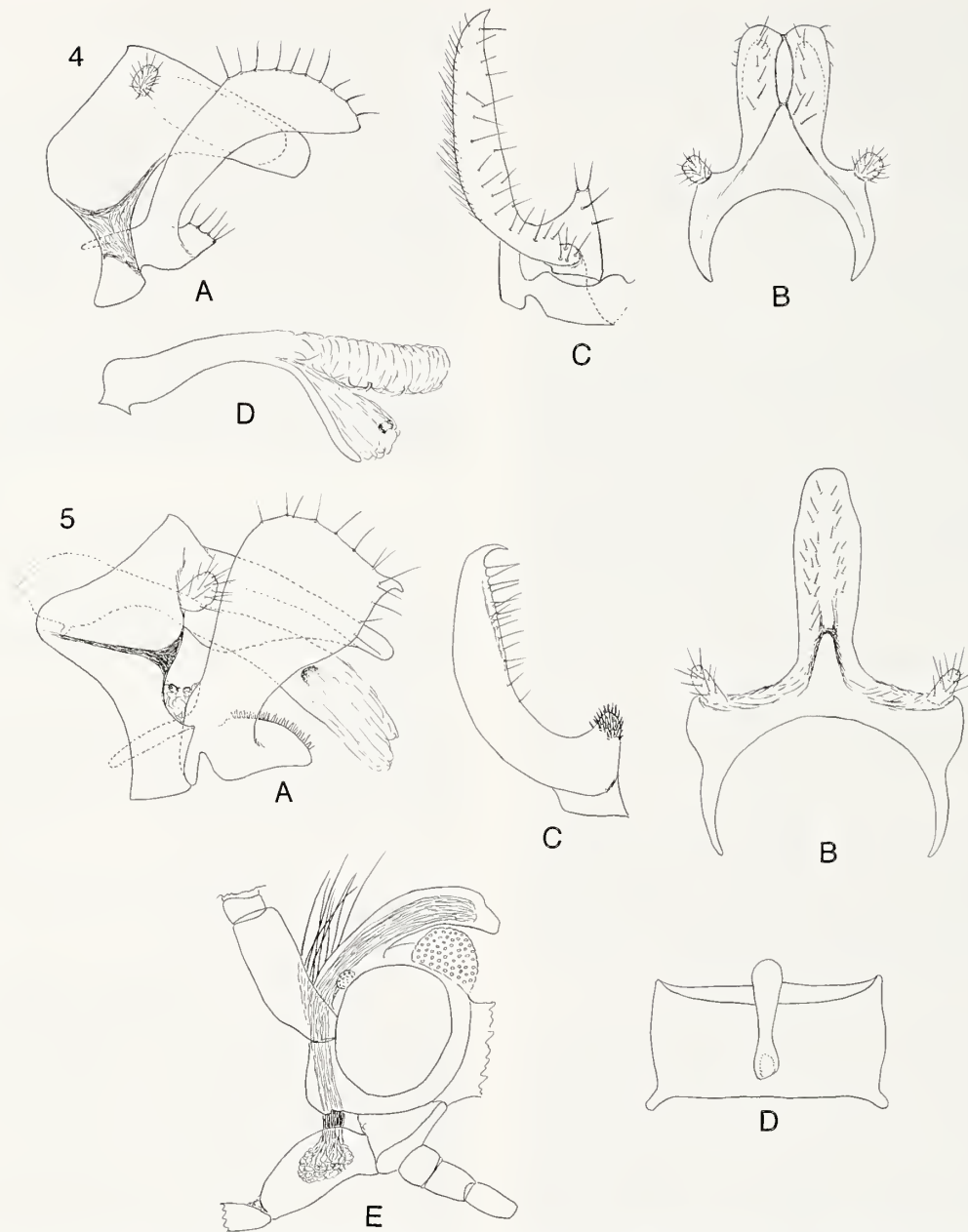


Fig. 4.—*Helicopsyche parahageni* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendage, posteroventral. D, Phallus, lateral.

Fig. 5.—*Helicopsyche melanochaeta* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendage, posteroventral. D, Sixth sternum, ventral. E, Head, lateral.

from the lectotype: it matches perfectly except that it is less damaged from handling. The following characters are apparent from this specimen: lateral abdominal membranes hairy; abdominal sterna 2–6 with strong posterior brushes, progressively denser toward 6; 6th sternal process large, terete, apex rounded; 7th sternum with anterior margin moderately W-shaped, with elongate, spinose hair across entire venter, oblique bars only slightly darkened, broad, barely noticeable; 8th sternum

almost uniformly covered with elongate, spinose setae. Otherwise all other parts of the abdomen and genitalia appear as in *H. altercoma*.

Helicopsyche (Feropsyche) nigrisensilla
Botosaneanu and Flint

Helicopsyche nigrisensilla Botosaneanu and Flint, 1991a:210, figs. 43–49 [♂, ♀]. Botosaneanu, 1996:22 [distribution]; Johanson, 2002:109, fig. 55 [♂].

The species is known only from the Dominican Republic at higher elevations in the Cordillera Central in the provinces of La Vega and now Peravia. The male does not seem to have any secondary sexual modifications of maxillary palpi, head, wings or abdomen.

Material Examined.—**DOMINICAN REPUBLIC. La Vega Province:** 2.5 km SW Piñar Bonito, 18°51'N, 70°43'W, 1430 m, 26 November 1992, Rawlins et al., 2♂, 2♀ (CMNH). Reserva Científica Valle Nuevo, Sector La Nevera. 3 km WNW La Nuez, 18°42'N, 70°36'W., 2200 m, 7 October 1991, Rawlins et al., 3♂ (CMNH). 8 km SE Constanza, near Valle Nuevo, 18°50'N, 70°42'W, 1930 m, 17 August 1990, Rawlins & Thompson, 1♂, 1♀ (CMNH). 11.5 km S. of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 10♂, 10♀ (NMNH). **Peravia Province:** 3 km SW La Nuez, tributary to Río Las Cuevas, 18°40'N, 70°36'W, 1870 m, 5–6 August 1990, Rawlins & Thompson, 5♂, 1♀ (CMNH). 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, 5–6 August 1990, Rawlins & Thompson, 1♂, 5♀ (CMNH).

Helicopsyche (Feropsyche) melanochaeta
Flint and Sykora, **new species**
(Fig. 5)

Helicopsyche sp. indet. ex “gr. *comosa*” Botosaneanu, 1996:22, fig. 56, 57 [?].

This large species of *Helicopsyche* has been taken at both the far western and eastern ends of the Dominican Republic, but only at low elevations. It, *H. comosa* Kingsolver, *H. poliochaeta*, and *H. altercoma*, form a distinctive group in which the hair pencil of the basal maxillary palpal segment is enclosed in a cephalic groove. Recently Botosaneanu and Hyslop (1998) reported a similar modification in *H. ochthothephila* Flint and *H. falcigona* Botosaneanu and Flint, but in these species the basal maxillary palpal segment bears a hair pencil similar to that of *H. kalaom*, but the setae of the laterofrontal warts are elongate, black and produced posteriad into the cephalic groove which is not as tubular as in *H. melanochaeta*.

Helicopsyche poliochaeta is undoubtedly the most closely related species to *H. melanochaeta* based on the modifications of the head and maxillary palpi and the male inferior appendages. *Helicopsyche melanochaeta* is to be recognized by the intensely black coloration of the palpal hair brush, the larger mesobasal lobe of the inferior appendage and the long tenth tergum with an irregular row of setae on each side.

Adult Male.—Length of forewing, 5.5 mm. Color uniformly dark brown, paler ventrally. Maxillary palpus with basal segment widened, bearing dense tuft of very long, black, enlarged hairs from pocket on dorsomesal face near base; these hair pencils fitting into groove formed mesally in face and vertex of head by parallel carinas produced dorsad and posteriad from cephalic groove and meeting mesally, and extend posteriad just beyond rear of head. Internally a tubular opening is formed which can be opened dorsally where the two halves meet. Abdominal membrane between terga and sterna with long, thin hair; third and fourth sterna covered with very dense, strong reticulations, sterna 5–7 with dark

bordered pale spots around setal bases; sixth sternum with large mesal process as long as sternum, posterior margin densely hairy. Genitalia: Ninth segment narrow dorsally and ventrally; anterior margin strongly produced at midheight; with lateral brace not reaching anterior margin. Tenth tergum very long and slender, high basally; in dorsal aspect with tip narrowly rounded, with narrow U-shaped mark basally, each side with irregular row of short setae. Cercus ovoid. Inferior appendage broadened dorsally, dorsal margin rounded with scattered spinose setae; apicodorsal angle produced into sharp tooth, posterior margin sinuate, in posterior aspect with mesal face bearing scattered, spinose setae from protuberant bases; mesobasal lobe well developed, prominent in both lateral and posterior aspects, densely covered with short spines. Phallus very long, slender, enlarged basally, with small C-shaped internal, phallotremal sclerite.

Female.—Length of forewing, 6.5–8 mm. Color similar to male. Abdominal membrane between terga and sterna densely covered with long, thin hair; third and fourth sterna covered with very dense, strong reticulations; sterna 5 & 6 with dark-bordered, pale spots around setal bases; seventh sternum with posterior margin deeply indented by broad V-shaped sclerite; eighth sternum mesally with broad, darkened sclerite having lateral margins tapered anteriorly, setal bases laterad of this sclerite surrounded by dark-bordered, pale spots. Sixth sternum with mesal process half as long as sternum. Genitalia: Ninth segment anterolaterally with elongate, darkened, alveolar patch; ventrally with pair of large, rounded sclerites. Vaginal sclerites of usual form.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, O.S. Flint (NMNH). Paratypes: Same data, 9♀ (NMNH); same, but 18 March 1999, 8♀ (NMNH); same, but 20 March 1999, 53♀ (NMNH). Río Mulito, 2 km from Mencia de Pedernales, Sierra de Baoruco, 5 May 1995, L. Botosaneanu, light, ♀ (ZMUA). **Barahona Province:** confluence of Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 2♂, 2♀ (CMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 3♂, 12♀ (CMNH, NMNH). **La Altagracia Province:** Río Nisibón, 2 km E Nisibón, 12 June 1986, Woodruff & Stange, 1♂, 2♀ (FSCA).

Helicopsyche (Feropsyche) poliochaeta
Flint and Sykora, **new species**
(Fig. 6)

Another member of the *H. comosa* group, this species is closely allied to *H. melanochaeta*. It differs from the latter species in that the hair pencil from the maxillary palpus is pale in color, the mesobasal lobe of the inferior appendage is small with few spines, and the tenth tergum is short with a single row of setae on each side.

Adult Male.—Length of forewing, 4 mm. Color uniformly brown, paler ventrally. Maxillary palpus with basal segment widened, bearing dense tuft of very long, pale gray, enlarged hairs from pocket on dorsomesal face near base; second pair of similar hair pencils arising on

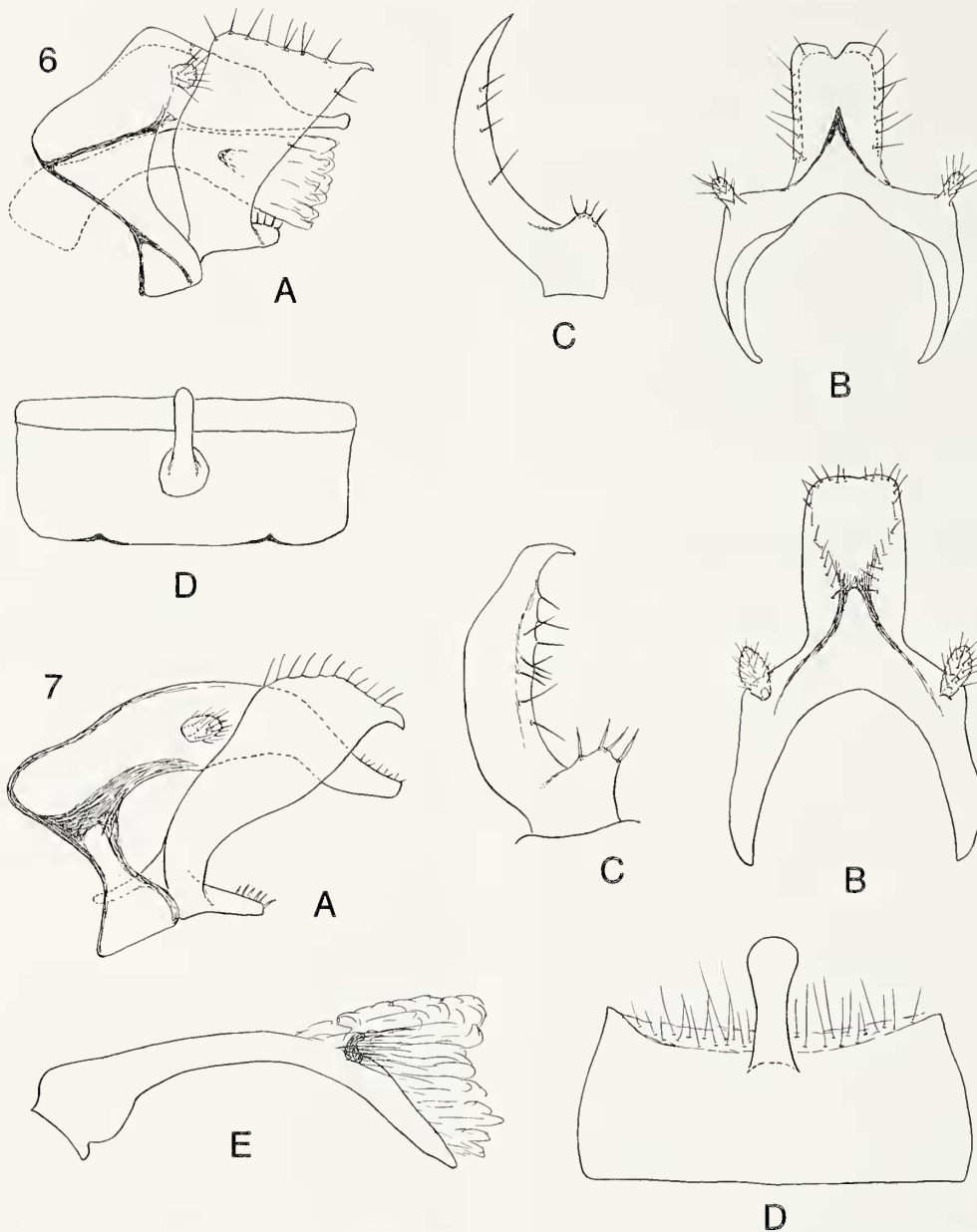


Fig. 6.—*Helicopsyche poliochaeta* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendage, posteroventral. D, Sixth sternum, ventral.

Fig. 7.—*Helicopsyche septifera* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendage, posteroventral. D, Sixth sternum, ventral. E, Phallus, lateral.

front beneath antennae, these two pairs of hair pencils fitting into groove formed mesally in face and vertex of head by parallel carinas produced dorsad and posteriad, meeting mesally, and extending posteriad almost to rear of head. Internally a tubular opening is formed which can be opened dorsally where the two halves meet. Abdominal membrane between terga and sterna with sparse, long, thin hair; third and fourth sterna covered with dense reticulations; fifth sternum with few, indistinct reticulations, sterna 5–7 with dark spots around setal bases; sixth sternum with

large mesal process as long as sternum arising from enlarged base, posterior margin sparsely hairy. Genitalia: Ninth segment narrowed dorsally and ventrally, dorsolaterally with low carina, seen in lateral aspect; anterior margin strongly produced at midheight; with lateral brace oblique, joining anterior brace along anterior margin, anterior brace extending obliquely ventrad across sternal region to posterior margin. Tenth tergum long and slender in dorsal aspect with tip shallowly bifid, with V-shaped mark basally, each side with row of spinose setae along

margin. Cercus, small ovoid. Inferior appendage broadened dorsally, dorsal margin nearly straight with scattered spinose setae; apicodorsal angle produced into sharp tooth. posterior margin straight; in posterior aspect with mesal face bearing few spinose setae; mesobasal lobe small, seen in both lateral and posterior aspects, with few short, thick spines. Phallus long, slender, enlarged basally, with small C-shaped internal, phallotremal sclerite.

Female.—Length of forewing, 4.5–5 mm. Color similar to male. Abdominal membrane between terga and sterna with long, thin hair; third sternum with single row of large reticulations; fourth sternum with 1.5 rows of large, irregular reticulations; sterna 5 and 6 with scattered setae anteriorly and posterior margins with brushes of long setae; sixth sternum with short, pointed mesal process arising from much enlarged base; seventh sternum with posterior margin deeply indented by broad, indistinct, V-shaped sclerite; eighth sternum mesolaterally with scattered, long setae, posteromesally with slightly darkened, broadly V-shaped sclerite with scattered, long setae. Genitalia: Ninth segment laterally with elongate, ovoid, alveolar patch, slightly darkened. Vaginal sclerites of usual form.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, Pedernales Province**: Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, O.S. Flint (NMNH). Paratypes: Same data, 1♂, 1♀ (NMNH); same, but 18 March 1999, 6♀ (NMNH). **Elias Piña Province**: 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 3♀ (NMNH). **El Seibo Province**: Pedro Sanchez, small stream, 10 June 1976, R.E. Woodruff, 1♀ (FSCA). **La Altagracia Province**: Río Nisibón, 2 km E Nisibón, 12 June 1986, R. Woodruff & L. Stange, 4♂, 6♀ (FSCA, NMNH).

Helicopsyche (Feropsyche) septifera
Flint and Sykora, **new species**
(Fig. 7)

Helicopsyche cf. *minima* Von Siebold: Botosaneanu, 1996:22 [♀].

This species is very closely related to *H. haitiensis*, and very probably is its sister species, having almost identical shapes of the inferior appendages and the ninth segment. It is to be recognized most readily by the dorsal aspect of the tenth tergum. In *H. haitiensis* the basal dark mark has a distinct, inverted Y-shape, in *H. septifera* it lacks the long, mesal posterior extension and has an anteromesal, narrow, U-shaped incision; in addition the dorsal area of *H. haitiensis* over most of its surface is covered with short setae, which in *H. septifera* are confined to a row along the side and apex, leaving the central area bare. In addition the ninth segment in *H. haitiensis* bears a distinct, oblique, ventrolateral brace which is reduced to a small spur in *H. septifera*, and the new species is smaller with forewing length of barely 4 mm rather than 7 mm.

Adult Male.—Length of forewing, 4 mm. Color pale brown, forewing paler along posterior margin. Maxillary palpus, head, and wings unmodified. Third and fourth abdominal sterna covered with distinct, large reticulations; fifth sternum with few, indistinct reticulations; sixth sternum with large mesal process as long as sternum

arising from near posterior margin of segment. Genitalia: Ninth segment narrowed ventrally, very narrow laterally, dorsally curving smoothly into tenth tergum; anterior margin strongly produced at midheight; with lateral brace oblique, joining anterior brace along anterior margin below anterolateral lobe and extending ventrad, with small spur above venter; posterior margin with strong support. Tenth tergum parallel-sided in dorsal aspect with tip truncate; its basal dark mark with anterior arms strongly divergent anteriorly, narrow U-shaped pale area apically; each side with row of short, spinose setae running from U-shaped mark to lateral margin and around apex, smooth centrally. Cercus, small ovoid. Inferior appendage broadened dorsally, dorsal margin slightly convex, with scattered spinose setae; apicodorsal angle produced into sharp tooth, posterior margin straight; in posterior aspect with mesal face bearing few spinose setae; mesobasal lobe elongate, narrow in lateral aspect, about as broad as long in posteroventral aspect, with few short, thick spines dorsally. Phallus long, slender, enlarged basally, with small C-shaped internal, phallotremal sclerite.

Female.—Length of forewing, 4.5–5 mm. Color similar to male. Abdominal membrane between terga and sterna with long, thin hair; third and fourth sterna with several irregular rows of large reticulations; fifth sternum with few reticulations; sterna 5 and 6 with scattered setae anteriorly and posterior margins with brushes of long setae; sixth sternum with elongate, tapering mesal process; seventh sternum with scattered setae, V-shaped sclerite barely visible; eighth sternum with numerous, long setae, posterior margin slightly darkened. Genitalia: Ninth segment laterally almost covered by dark, alveolar patch, tenth segment basolaterally with small alveolar patch. Vaginal sclerites of usual form.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, Pedernales Province**: Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, O.S. Flint (NMNH). Paratypes: Same data, 2♀ (NMNH); same, but 18 March 1999, 1♂, 2♀ (NMNH); same, but 20 March 1999, 2♀ (NMNH). Río Mulito, 2 km from Mencia de Pedernales, Sierra de Baoruco, 5 May 1995, L. Botosaneanu, light, 2♀ (ZMUA). **Barahona Province**: confluence of Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 4♀ (CMNH). Río Nizaito, 5 km NW Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint, 1♀ (NMNH).

Family Hydrobiosidae
Genus *Atopsyche* Banks

Only a single genus of this family, that is lacking on the Lesser Antilles, is known from the Greater Antilles. All the Greater Antillean islands harbor at least one species: Cuba with two, Hispaniola now with nine, Jamaica with two, and Puerto Rico with one. Of the Hispaniolan species, three are known only from Haiti, and the other six only from the Dominican Republic. It seems rather surprising that from the 185 specimens of the genus collected by the Carnegie expeditions, 180 were a single new species which had not been taken in previous trips to the island.

Careful study of the female genitalia of the species reported from the Dominican Republic has allowed firm association of the sexes for all the species known from the central and eastern areas of the island and thus produced a few more confirmed records for those species. As a result, an additional species from the Cordillera Oriental near the eastern corner of the country has come to light. The presence of the genus in Dominican amber has been recorded by Wichard (1987), but no species are yet described.

The larvae are well known, having been described a number of times: Botosaneanu and Sykora, 1973; Flint, 1963; Wiggins, 1996. They are typical inhabitants of cool, lotic waters and are primarily predators on other arthropods.

Atopsyche batesi Banks

Atopsyche batesi Banks 1938:304, fig. 29 [♂]. Ross and King, 1952:198, fig. 16 [♂].

Collections from the type locality have produced a second collection of this species, 50 years after the types were taken. All lots are from La Visite in the Massif de la Selle, in the southeastern extremity of Haiti close to the Dominican border.

Material Examined.—HAITI. [Département de L'Oueste]: La Visite & vic., La Selle Range, 5–7000 ft. [1525–2135 m], 16–23 Sept. 1934, M. Bates, ♂ holotype, ♂ paratype (MCZ). Parc National La Visite, Pic La Visite, 2100 m, 11 May 1984, blacklight, Thomas, 4♂, 2♀ (FSCA, NMNH); same, but basecamp, 1980 m, 19 May 1984, 1♀ (FSCA).

Atopsyche conventica Flint

Atopsyche conventica Flint 1974:4, figs. 18–20 [♂].

The association of the females of this species enlarges the series from the type locality and produces a few new records, most from the same general region in the Province of La Vega but also one from the Province of Elias Piña.

Material Examined.—DOMINICAN REPUBLIC. **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 5♀ (FSCA, NMNH). **La Vega Province:** Convento, 12 km S of Constanza, 6–13 June 1969, Flint & Gómez, ♂ holotype, 1♂ paratype, 7♀ (NMNH). La Palma, 12 km E El Río, 2–13 June 1969, Flint & Gómez, 5♀ (NMNH). Constanza, Hotel Nueva Suiza, 29 May 1973, D. & M. Davis, 1♀ (NMNH). Constanza to Jarabacoa, 2–4,000 ft. [610–1220 m], August 1938, Darlington, 2♀ (MCZ). La Cienega de Manabao, Park Headquarters, 20–21 April 2000, Woodruff & Henry, 25♀ (FSCA, NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 1♂, 2♀ (FSCA).

Atopsyche davisorum Flint

Atopsyche davisorum Flint 1974:4, figs 21–23 [♂].

The known range of this species is extended from that of the holotype, Elias Piña, to include the Provinces of Dajabón and Peravia.

Material Examined.—DOMINICAN REPUBLIC. **Dajabón Province:** 13 km S Loma de Cabrera, 20–22 May 1973, D. & M. Davis, 2♀ (NMNH). 9 km S Loma de Cabrera, 12 July 1992, Rawlins et al., 1♀

(CMNH). **Peravia Province:** 3 km SW La Nuez, upper Río Las Cuevas, 5–6 August 1990, Rawlins & Thompson, 2♀ (CMNH); same, but 5–6 Oct 1991, Rawlins et al., 1♀ (CMNH).

Atopsyche linnulus Flint and Sykora, new species (Fig. 8)

This, the smallest species of the genus yet discovered on Hispaniola, was taken near the Haitian border inland from the Caribbean coast.

Atopsyche linnulus is another member of the *A. batesi* Group, but is otherwise very distinctive. It does have a much shortened filicercus and marks an intermediate condition between those species with long filicerci, such as *A. conventica*, and *A. batesi* which lacks the filicercus. It is the only known Hispaniolan species with a short filicercus, but the Jamaican *A. brachycerca* Flint, which is otherwise not closely related, likewise has a short filicercus. The very long apical segment of the inferior appendage with a short dorsal lobe and basomesal, pointed flap from the basal segment are unique features among the insular species.

Adult Male.—Length of forewing, 5–5.5 mm. Color brown, with oblique pale, transverse band near mid-length bordered apically by narrow dark band, apical half slightly paler than basal half, with some pale mottling. No veins with scale-like setae. Third tergum with anterior third modified, impressed and covered with short, specialized setae; fourth tergum unmodified. Fifth sternum with short anterolateral process barely half as long as its segment. Sixth sternum with posteromesal process reaching posterior margin of seventh sternum; seventh sternal process slightly longer than one-fourth of its sternum. Genitalia: Ninth segment with anterolateral margin produced and angulate; posteroventrally produced beneath inferior appendage. Tenth tergum membranous, typical of genus. Paracercus narrowing apicad, dorsal margin produced into erect, apical and subapical teeth. Filicercus short, tubular, half length of paracercus; cercus buttonlike with a short stalk. Inferior appendage with basal segment bearing basomesal shelf-like flap ending in apicomesal point and projecting slightly ventrad of segment in lateral aspect, apicodorsally produced into short, broad lobe dorsally covering base of apical segment; apical segment long, tapering apicad, especially in ventral aspect, bearing shallow mesal carina from base. Phallus with base elongate, broad, bearing articulated dorsal process; phallosomal beaks developed as elongate, ventral, spines curved sharply dorsad, in dorsal aspect each with subapical point born from ventral margin; mesally with single, straight spine.

Female.—Length of forewing, 6–7 mm. Color as in male.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 270 m, 18 March 1999, O.S. Flint (NMNH). Paratypes: Same data, 1♂, 8♀ (NMNH, CMNH); same, but 20 March 1999, 5♀

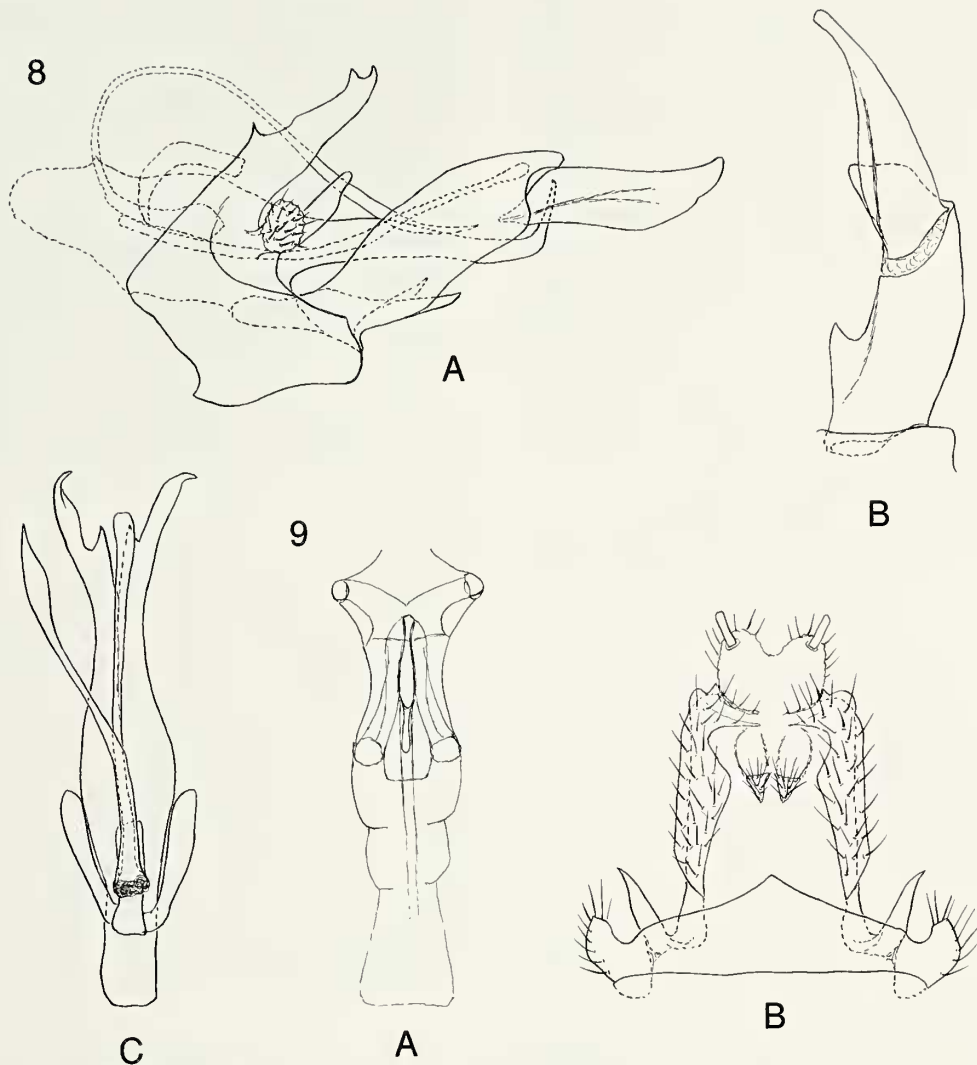


Fig. 8.—*Atopsyche himmulus* new species, male genitalia: A. Lateral. B. Inferior appendage, posteroventral. C. Phallus, dorsal.

Fig. 9.—*Atopsyche orientalis* new species, female genitalia: A. Vaginal sclerites, ventral. B. 8th, 9th, and 10th segments, ventral.

(NMNH). Along Rfo Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, riparian woodland, J. Rawlins, S. Thompson, C. Young, R. Davidson, 8♂ (CMNH, NMNH).

Atopsyche lilicae Botosaneanu

Atopsyche lilicae Botosaneanu 1991a: 114, figs. 3–6 [♂]

This species is still known only from the types collected in central Haiti.

Material Examined.—HAITI. Département de L'Ouest: "Le Saut d'Eau" (Ville Bonheur), 27 November 1979, L. Botosaneanu, 1♂ paratype (ZMUA).

Atopsyche orientalis Flint and Sykora, new species (Fig. 9)

We depart from our usual procedure to describe this species from a female only. All the other species known

from the Dominican Republic have their females known and readily distinguishable. *Atopsyche orientalis* is totally distinct from them all in its genital structure.

The coloration of *A. orientalis* is very pale with a dark basal triangle resting on the costal margin, only similar to the female of *A. davisorum*, but it is paler yet. The females of *A. taina* Flint also taken at the same site, are very dark winged. The genitalia of *A. orientalis* differ from those of the other insular species in lacking a setate sclerite mesally on the fused ninth-tenth sternal area and in the possession of the basolateral, leaf-like, free sclerite from the tenth segment, as well as the details of the vaginal sclerites.

Adult Male.—Unknown.

Female.—Length of forewing, 6.5 mm. Color: Head and thorax with cream-colored hair and sclerites; forewing mostly cream-colored, with basal, brown triangle

broadest on costal margin, some darker marking apicad, especially on costal margin. Third and fifth abdominal segments unmodified; sixth segment with small, anterolateral, projecting angle, apicomeral process reaching posterior margin of seventh segment; apicomeral process of seventh segment very short, barely one-fourth length of segment; eighth sternum obtusely angulate and densely hairy mesally. Genitalia: Ninth segment with distinct posterolateral lobe, posterior margin broadly angulate mesally, lacking any mesal sclerite bearing setae. Tenth segment invaginated basolaterally, with a free-standing, leaf-like sclerite produced posteriad; sclerotized and setate laterally with pair of small setate sclerites posteromesally. Vaginal sclerites complex: with elongate, slit-like mesal opening giving rise to pair of slender apodemes anteriorly; laterally almost parallel-sided, convoluted, posterolaterally with small arm-like sclerites.

Type Material.—Holotype, female: **DOMINICAN REPUBLIC. El Seibo Province**: 15 km S Miches, ca. 500 m, 31 May 1973, D. & M. Davis (NMNH).

Atopsyche peravia Flint and Sykora, **new species**
(Fig. 10)

This previously unknown species was taken in large numbers by several of the Carnegie Museum expeditions in the provinces of Peravia, La Vega, and on the border between La Vega and Monseñor Nouel.

Atopsyche peravia is very closely related to the Haitian *A. batesi*, but is distinguished by the elongate, slender apices of the clasper segments, by the shape of the apex of the phallus which is turned sharply laterad in dorsal aspect, and by the broader and more serrate apex of the paracercus. The very long and slender filicercus of *A. peravia* is lacking on the type of *A. batesi*. The lectotype of *A. batesi* was examined with care to see if these structure were broken off in the type. No broken basal remanent is present nor is there any clear tear in the sclerites at this point; there does seem to be a very small nipple, hardly as long as wide, at this point, supporting the assumption that the filicercus is truly lacking in *A. batesi*.

Adult Male.—Length of forewing, 7–10.5 mm. Color dark brown, almost fuscous; forewing dark brown, with some narrow, oblique pale bands and mottling, pale subapically. No veins with scale-like setae. Third tergum with anterior third modified, impressed and covered with short, specialized setae; fourth tergum with similar modification, but only for anterior fourth. Fifth sternum with long anterolateral process reaching to middle of seventh sternum. Sixth sternum with posteromesal process reaching posterior margin of seventh sternum; seventh sternal process slightly longer than half of its sternum. Genitalia: Ninth segment with anterolateral margin produced into small lobe; posteroventrally strongly produced. Tenth tergum membranous, typical of genus. Paracercus broad, dorsal margin produced into

small dorsal and subapical teeth. Filicercus long and slender, surpassing paracercus; cercus buttonlike with short stalk. Inferior appendage with basal segment slightly inflated at midlength, apex produced into a long, slender, dorsomesal process; apical segment long and slender, surpassing dorsomesal process. Phallus with base elongate, narrow, bearing articulated dorsal process; phalothecal beaks developed as ventral, hook-like spine curved dorsad and subapical shoulder produced laterad and spinulose; mesally with single, straight spine.

Female.—Length of forewing, 9–11.5 mm. Color more strongly marked with pale areas than male; forewing with pale, basal semicircular mark and oblique pale band from near base to midlength on anterior margin, setting off dark, triangular area centered on anterior margin, apical two-thirds heavily mottled with pale markings.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Peravia Province**: 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, cloud forest on river, 5–6 October 1991, J. Rawlins, R. Davidson, C. Young, & S. Thompson (CMNH). Paratypes: Same data, 2♂, 40♀ (CMNH, NMNH); same, but 2 September 1995, Rawlins et al., 1♂ (CMNH); same, 5–6 August 1990, 32♂, 94♀ (CMNH, NMNH, FSCA). **La Vega Province**: 2.5 km SW Piñar Bonito, 18°51'N, 70°43'W, 1430 m, riparian vegetation near stream in pine woodland, 26 November 1992, Rawlins et al., 1♂, 1♀ (CMNH), 9 km SE Constanza, near Valle Nuevo, 18°50'N, 70°42'W, 1930 m, 17 August 1990, Rawlins & Thompson, 3♂, 1♀ (CMNH, NMNH), 18 km SE Constanza, 18°46'N, 70°39'W, 2310 m, pine woodland near head of small stream, 25 November 1992, Rawlins et al., 1♂ (CMNH), 23 km SE Constanza, 18°45'N, 70°37'W, 2225 m, grassland with pines and scattered marshes, 24–25 November 1992, Rawlins et al., 1♂ (CMNH). Reserva Científica Valle Nuevo, Sector La Nevera, 3 km WNW La Nuez, 18°42'N, 70°36'W, 2200 m, mesic pine woodland, 7 October 1991, Rawlins et al., 6♂, 1♀ (CMNH, NMNH). **La Vega-Monseñor Nouel Provinces**: Loma el Casabito, summit, 19°03'N, 70°31'W, 1390 m, cloud forest, 19–23 November 1992, Rawlins et al., 6♂, 4♀ (CMNH, NMNH).

Atopsyche taina Flint

Atopsyche taina Flint 1974:4, figs. 15–17 [♂].

The original male types of this species were from the Provinces of La Vega and Dajabón. The new records extend the range into El Seibo and probably Santiago Provinces and add a female to the Dajabón locality.

Material Examined.—**DOMINICAN REPUBLIC. Dajabón Province**: 13 km S Loma de Cabrera, 20–22 May 1973, D. & M. Davis, 1♂ paratype, 1♀ (NMNH). **El Seibo Province**: 15 km S Miches, 31 May 1973, D. & M. Davis, 2♀ (NMNH). **La Vega Province**: La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 1♂ (FSCA). [**Santiago Province**, probably]: foothills Cordillera Central, S of Santiago, June 1938, Darlington, 1♀ (MCZ).

Atopsyche thomasi Flint and Sykora, **new species**
(Fig. 11)

Atopsyche thomasi is very closely related to the Haitian *A. lilicae*, but is distinguished by several differences in the male genitalia. The apex of the paracercus is more elongate and bears a distinct lateral spine subapically in

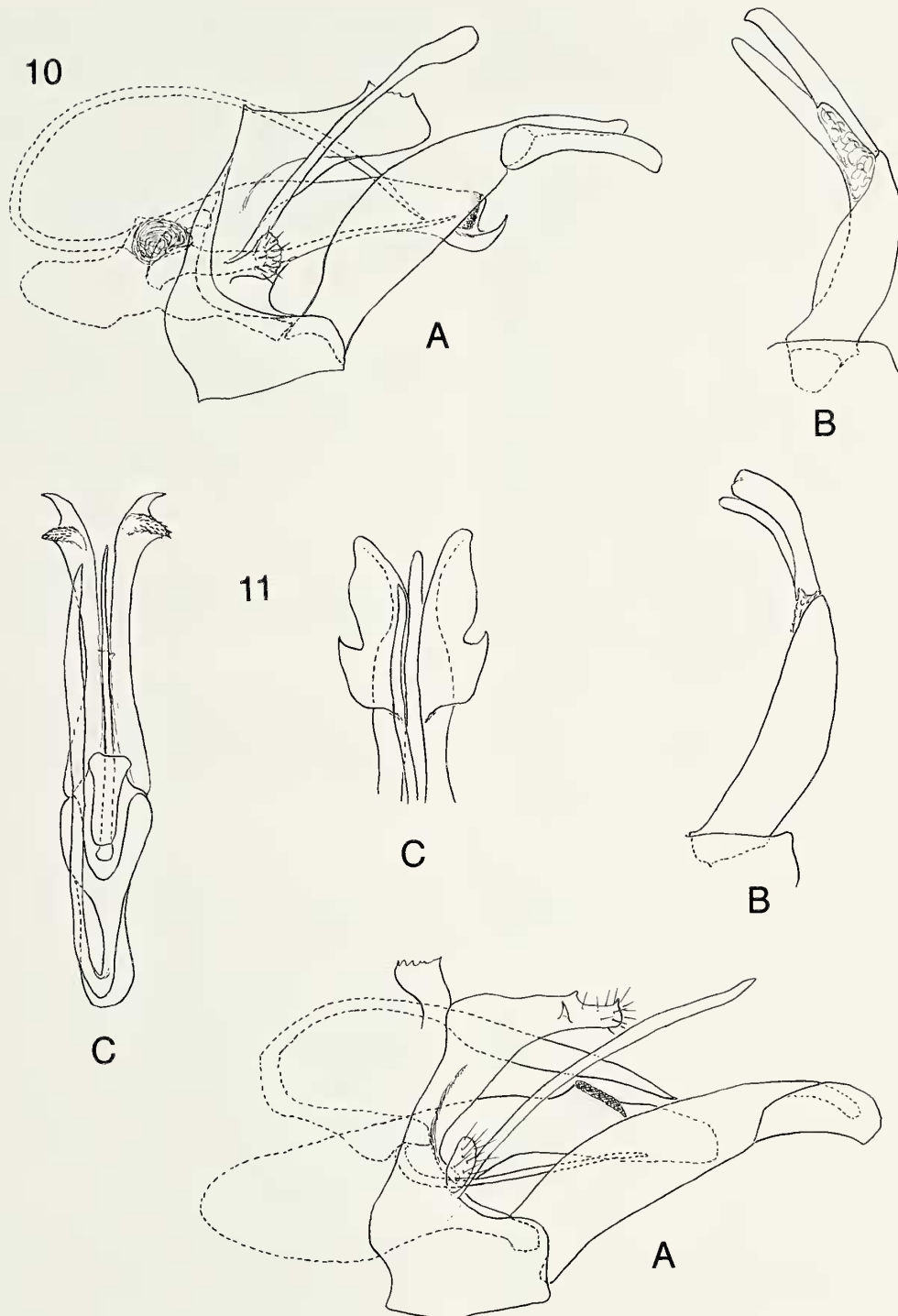


Fig. 10.—*Atopsyche peravia* new species, male genitalia: A, Lateral. B, Inferior appendage, posteroventral. C, Phallus, dorsal.

Fig. 11.—*Atopsyche thomasi* new species, male genitalia: A, Lateral. B, Inferior appendage, posteroventral. C, Tip of phallus, dorsal.

A. thomasi. The major difference is seen in the dorsal, subapical lobes of the phallus which in *A. lilicae* extend straight out from the phallus in the form of a tapering, apically pointed, flap, but in *A. thomasi* they are broad and

shallow with the apex hooked posteriad. Also the apex of the inferior appendage is only slightly enlarged and rounded in *A. thomasi*, but more clearly broadened and bearing a small nipple-like lobe in *A. lilicae*.

The types of *A. lilicae* are from the north of the Enriquillo Depression and that of *A. thomasi* from the south. It seems possible that this is another vicariant pair separated by this depression such as *Streptopsyche parander* (Botosaneanu) and *S. davisorum* Ross and Unzicker.

Adult Male.—Length of forewing, 7.5 mm. Color in alcohol dark brown; forewing dark brown, with some pale mottling, especially along veins. No veins with scale-like setae. Third tergum with anterior third modified, bearing four impressed areas filled with short, specialized setae (as shown by Botosaneanu, 1991a, fig. 3). Fifth sternum with long anterolateral process reaching to anterior margin of seventh sternum. Sixth sternum with posteromesal process reaching posterior margin of seventh sternum; seventh sternal process slightly longer than half of its sternum. Genitalia: Ninth segment with anterolateral margin sinuate; posteroventrally strongly produced. Tenth tergum membranous, typical of genus. Paracercus cylindrical, elongate, with small anteapical teeth, one on dorsal margin other lateroventrally. Filicercus long and slender, surpassing paracercus; cercus ovoid. Inferior appendage with basal segment almost three times as long as wide, apex produced into long, slender, dorsomesal process; apical segment elongate, slightly enlarged subapically, tip rounded. Phallus with base elongate, bearing articulated dorsal process; phallosomal beaks developed subapically as dorsal flaps, in dorsal aspect shallow and elongate each with tip produced into sharp point directed posteriad; mesally with single, straight spine.

Female.—Unknown.

Type Material.—Holotype, male: HAITI, Département de l'Ouest: saddle between Fe Noir and Enfer, 1700 m. 16 May 1984, M.C. Thomas (FSCA).

Atopsyche species

We have seen single females of two species of the genus from the extreme southwestern parts of Haiti and the Dominican Republic. Their genitalia are different from those of any of the species whose females are known, but *A. lilicae* and *A. thomasi* are known only from males and occur in the southern half of Haiti. For this reason these females are left undescribed.

Material Examined.—HAITI, Département du Sud: Ville Formon, 31 km NW Les Cayes, s slope Morne Formon, Massif de la Hotte, 18°20'N, 74°01'W, 1405 m, 2–8 September 1995, Rawlins et al., 1♀ (CMNH).

DOMINICAN REPUBLIC, Barahona Province: Nr. Filipinas, Larimar Mine, 3300 ft [ca. 1205m], 12 April 1997, Woodruff, 1♀ (FSCA).

Family Hydropsychidae Genus *Calosopsyche* Ross and Unzicker

This is a genus of limited distribution. Species are found on the islands of Cuba and Hispaniola and in

Central America from Costa Rica and Panama. Four species are described from Cuba, and four from Hispaniola, two of which are limited to the Dominican Republic and two to Haiti. Both of the Haitian species are known from only the unique female holotypes. The amber fossil, *Palaehydropsyche fossilis*, would appear to be somewhere in the lineage of this (Wichard, 1986). The immature stages of the continental *C. continentalis* are described (Flint and Bueno, 1987), as are those of the Cuban *C. cubana* (Botosaneanu, 1994b).

Calosopsyche batesi (Flint)

Hydropsyche batesi Flint, 1962:25, fig. 6 [♀].

Calosopsyche batesi (Flint): Ross and Unzicker, 1977:309; Flint and Bueno, 1987:33 [listed].

This species is still known only from the unique female holotype taken in the La Selle Range in southeastern Haiti.

Calosopsyche bohio (Botosaneanu)

Hydropsyche bohio Botosaneanu, 1991a:132, fig. 58, 59 [♀].

Calosopsyche bohio (Botosaneanu), Flint et al., 1999:75 [to *Calosopsyche*].

This species is still known only from the unique female holotype taken at the Saut d'Eau in the Département de l'Ouest in central Haiti. However, it is possible that the male of this species is described herein as *Streptopsyche praecipua* n. sp.

Calosopsyche carinifera (Flint)

Hydropsyche carinifera Flint, 1962:27, fig. 7 [♀]. Botosaneanu, 1996:17.

Calosopsyche carinifera (Flint): Ross and Unzicker, 1977:309; Flint and Bueno, 1987:34, figs. 5, 6 [♀].

Originally described from the locality "foothills of the Cordillera Central, south of Santiago," its more recent records are all from elevations of over 1000 meters in the Cordillera Central. It is thus difficult to assess the location/elevation of the original record. It is now known from the Provinces of La Vega, Monseñor Nouel, Peravia, and San Juan, with the original record probably referable to the Province of Santiago.

Material Examined.—DOMINICAN REPUBLIC, La Vega Province: Reserva Científica Valle Nuevo, Sector La Nevera, 3 km WNW La Nuez, 18°42'N, 70°36'W, 2200 m, 7 October 1992, Rawlins et al., 1♀ (CMNH). La Vega-Monseñor Nouel Provinces: Loma El Casabito, summit, 19°03'N, 70°31'W, 1390 m, 19–23 Nov 1992, Rawlins et al., 3♂, 3♀ (CMNH). Monseñor Nouel Province [not La Vega Province as labelled]: 6 km [not mi. as labelled] NW of Rt. 1 on rd. to Constanza, 27 June 1998, Woodruff & Baranowski, 30♂, 39♀ (FSCA, NMNH). Paso Alto de Casabito, 8 km NW La Ceiba, 19°02', 70°29'W, 1280 m, 28 July 1992, Rawlins et al., 1♂, 1♀ (CMNH). 1 km E Paso Alto de Casabito, 7 km NW La Ceiba, 19°02'N, 70°29'W, 1130 m, 28 July 1992, Rawlins et al., 12♂, 10♀ (CMNH, NMNH). Peravia Province: 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, cloud forest on river, 5–6 August 1990, Rawlins & Thompson, 10♂, 182♀ (CMNH, NMNH); same, but 2 September 1995, Rawlins et al., 2♂, 4♀ (CMNH); same, but 5–6 October 1991, 21♂, 167♀ (CMNH, NMNH); same but tributary to Río Las

Cuevas, 1870 m, 18°40'N, 70°36'W, 5–6 August 1990, 2♀ (CMNH). **San Juan Province:** 7 km N Arroyo Caño, 1 km S Los Frios, 18°52', 71°01'W, 1120 m, 1 September 1995, Rawlins et al., 1♂ (CMNH).

Calosopsyche domingensis (Banks)

Hydropsyche domingensis Banks, 1941:398, figs. 32–34 [♂]. Flint, 1962:24, fig. 4 [♀]; Flint, 1967:12 [lectotype]; Botosaneanu, 1996:17, figs. 37–41 [♂, ♀].

Plectropsyche domingensis (Banks): Ross and Unzicker, 1977:308.

Calosopsyche domingensis (Banks): Flint, et al., 1999:75 [nomenclature].

This is a widespread species in the Dominican Republic, generally found in larger rivers and streams usually below 1000 meters, but sometimes occurring up to 1500 m in the Cordillera Central. It is now known from the Provinces of Azua, Dajabón, Elias Piña, La Vega, Monseñor Nouel, Monte Cristi, Puerto Plata, and Santiago.

The species is provisionally placed in the genus *Calosopsyche*, with which its genitalia are in best agreement. However, many aspects of the genitalia are very distinctive and with full knowledge of all the Antillean species, their immature stages, and a worldwide analysis, it may be necessary to erect a new genus for this species.

Material Examined.—**DOMINICAN REPUBLIC.** **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 100's ♂♂, ♀♀ (CMNH); same, but 7 August 1990, 100's ♂♂ ♀♀ (CMNH). **Dajabón Province:** Río Massacre, Balneario Don Miguel, 7 km SW Dajabón, 40 m, 26 May 1973, D. & M. Davis, 1♀ (NMNH). 9 m S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 50 ♂♂ ♀♀ (CMNH). 13 km SE Loma de Cabrera, ca 400 m, 20–22 May 1973, D. & M. Davis, 9♂, 18♀ (NMNH). **Elias Piña Province:** 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 4♂, 3♀ (NMNH). Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 35♂, 160♀ (FSCA). North slope Sierra de Neiba, 2 km SW Canada, 7 km WSW Hondo Valle, 18°42'N, 71°45'W, 980 m, 29 August 1995, Rawlins et al., 1♀ (CMNH). **La Vega Province:** Constanza, 2–6 June 1969, Flint & Gómez, 10♂, 9♀ (NMNH). Convento, 12 km SE Constanza, 6–13 June 1969, Flint & Gómez, 2♂, 1♀ (NMNH); same, but 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 8♂, 13♀ (NMNH). Jarabacoa, 9 Jan 1985, Munroe, 2♀ (NMNH); same, but 3–4 June 1969, Flint & Gómez, 21♂, 69♀ (NMNH); same, but 600 m, 9 August 1980, Norrbom, 1♀ (CMNH); same, but Río Jimenoa, 13 November 1984, Spangler et al., 7♂, 35♀ (NMNH). Río Baiguatè, 1–2 km S Jarabacoa, 8–9 May 1995, Flint, 12♂, 17♀ (NMNH); same, but 19 May, 12♂, 30♀ (NMNH). Río Baiguatè, Bamboo Hole Canyon, 5 km SE Jarabacoa, 580 m, 22 July 1987, Rawlins & Davidson, 1♀ (CMNH). 5 km SSE Jarabacoa, 640 m, 25 July 1987, Rawlins, 1♂, 4♀ (CMNH). 15 km N Jarabacoa, 240 m, 21 July 1987, Rawlins & Davidson, 6♀ (CMNH). Hotel Montana, 10 km NE Jarabacoa, ca. 520 m, 28 May 1973, D. & M. Davis, 3♂, 4♀ (NMNH). Río Camú, 19 km NE of Jarabacoa, 12 June 1969, Flint & Gómez, 30♂, 62♀ (NMNH). Río Camú, 3.5 km NW La Vega, 19°13.7'N, 70°35.2'W, 100 m, 10 May 1995, Mathis, 1♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°0.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 4♂, 11♀ (NMNH). La Palma, 12 km E of El Río, 2–13 June 1969, Flint & Gómez, 6♂, 19♀ (NMNH). La Cienega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 100's ♂♂ ♀♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 100's ♂♂ ♀♀ (FSCA). La Cienega, Río Yaque del Norte, 19°51.68'N, 70°51.68'W, 3640 ft. [ca. 1110 m], 29 July 1999, S. Peralta, 3♂, 6♀ (NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 100's ♂♂ ♀♀ (FSCA). Near mouth Arroyo Los Dajaos, 5 km SE Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 100's ♂♂ ♀♀

(CMNH). 2.5 km SW Piñar Bonito, 18°51'N, 70°43'W, 1430 m, 26 November 1992, Rawlins et al., 1♀ (CMNH). Bayacanes, 120 m, 24 July 1987, Rawlins & Davidson, 3♀ (CMNH). El Arroyazo, Reserva Científica Ebano Verde, 19°1.93'N, 70°32.62'W, 18 September 1999, Perez and Bastardo, 3♂, 10♀ (NMNH). **La Vega-Monseñor Nouel Provinces:** Loma El Casabito, summit, 19°03'N, 70°31'W, 1390 m, 19–23 November 1992, Rawlins et al., 1♂ (CMNH). **Monseñor Nouel Province:** Paso Alto de Casabito, 8 km NW La Ceiba, 19°02', 70°29'W, 1280 m, 28 July 1992, Rawlins et al., 1♂, 1♀ (CMNH). 1 km E Paso Alto de Casabito, 7 km NW La Ceiba, 19°02'N, 70°29'W, 1130 m, 28 July 1992, Rawlins et al., 4♂, 8♀ (CMNH). 6 km [not mi. as labelled] NW of Rt. 1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 4♂, 5♀ (FSCA). 9.2 km W Rt. 1 on Constanza Rd., 28 June 1998, Woodruff & Baranowski, 1♂, 2♀ (FSCA). Bonaó, Hotel Jacaranda, 28–30 June 1999, Woodruff & Baranowski, 1♂, 4♀ (FSCA); same, but 18 April 2000, Woodruff & Henry, 5♂, 4♀ (FSCA). Río Blanco, Hydroelectric Plant, 20 km W Bonaó, 600 m, 13 May 2001, Woodruff & Nuñez, 15♀ (FSCA). **Monte Cristi Province:** 10 km S Monte Cristi, 5 m, 23 May 1973, D. & M. Davis, 1♂, 5♀ (NMNH). 3 km N Villa Elisa, 1 October 1973, Woodruff & Stange, 1♂, 1♀ (FSCA). **Puerto Plata Province:** Los Hidalgos, 4–5 June 1969, Flint & Gómez, 11♂, 49♀ (NMNH). **San Cristóbal Province:** Hato Dumas, 21 October 1986, Woodruff & Frank, 1♂ (FSCA). [at or near Naranjo Dulce, 13 km N San Cristóbal]: S. Francisco Mts., September 1905, Aug. Busck, 6♀ (NMNH). **San Juan Province:** Río Mijo, 20 May 1985, Woodruff & Stange, 2♀ (FSCA). 7 km N Arroyo Caño, 1 km S Los Frios, 18°52'N, 71°01'W, 1120 m, 1 September 1995, Rawlins et al., 1♂, 6♀ (CMNH). **Santiago Province:** 1 km NE San José de Las Matas, 19°21'N, 70°56'W, 540 m, 11 July 1992, Rawlins et al., 5♂, 4♀ (CMNH). La Cumbre, 3000 ft [915 m], 25–26 April 1978, Woodruff et al., 1♀ (FSCA). Valle de Bao, 5885 ft. [ca. 1795 m], 9 July 1992, Ivie, 1♀ (NMNH).

Genus *Leptonema* Guerin

The genus contains over 100 species, the vast majority limited to the Neotropical Realm, including both the Greater and Lesser Antilles. A much smaller number of species are known from the Afrotropical Realm including Madagascar. A species is described from eastern Cuba and larvae are known from Puerto Rico. Wichard (1987) recorded the presence of three adults of this genus in Dominican amber. The larvae recorded as this genus by Botosaneanu (1991a) from the southern arm of Haiti have proven on further study to be *Macronema*, q.v.

Genus *Macronema* Pictet

This genus as presently constituted is composed of 30 described species limited to the Neotropical Realm, where it is known from Mexico to northern Argentina. It is recorded from the Greater Antillean islands of Cuba, Jamaica, and Puerto Rico. This is the first report of a species from Hispaniola. Since the record is based on larvae only, the species cannot be determined at this time.

Material Examined.—**HAITI.** **Département du Sud:** Rivière du Cavaillon, Saut Mathurine, 5 November 1979, L. Botosaneanu, 5 larvae (ZMUA).

Genus *Streptopsyche* Ross and Unzicker

This genus, now containing five species, is endemic to the island of Hispaniola. Three of the species have only been found in the Dominican Republic and the other two

only in Haiti. The immature stages of *S. parander* (Botosaneanu) are described (Flint, 2002).

Streptopsyche antilles (Ross and Palmer)

Hydropsyche antilles Ross and Palmer, 1946:184, figs. 1–4 [♂, ♀]. Flint, 1962:25, fig. 5 [♀].

Streptopsyche antilles (Ross and Palmer): Ross and Unzicker, 1977:307, figs. 19B, C [♂].

This species has only rarely been taken, and from widely separated localities. It was described from a "small mountain stream tributary to one of the rivers running to Trujillo City"; we assume that this is in the Distrito Nacional. It was later recorded from the Département de l'Ouest in Haiti and now from El Seibo, Elias Piña, and San Juan Provinces in the Dominican Republic.

Material Examined.—DOMINICAN REPUBLIC. **Elias Piña Province:** north slope Sierra de Neiba, 2 km SW Canada, 7 km WSW Hondo Valle, 18°42'N, 71°45'W, 980 m, 29 August 1995, Rawlins et al., 43♂, 62♀ (CMNH, NMNH). **El Seibo Province:** Loma Cocuyo, 6 km N Pedro Sánchez, 18°55'N, 69°07'W, 475 m, 4 July 1992, Rawlins et al., 1♀ (CMNH). **San Juan Province:** at river, 1 km off rd. to Vallejuelo, El Capá, 21 May 1985, Woodruff et al., 1♂, 1♀ (FSCA). 7 km N Arroyo Caño, 1 km S Los Frios, 18°52'N, 71°01'W, 1120 m, 1 September 1995, Rawlins et al., 1♂ (CMNH).

Streptopsyche davisorum Ross and Unzicker

Streptopsyche davisorum Ross and Unzicker, 1977:308, figs. 18A–C [♂]. Flint et al., 1999:76 [nomenclature]; Flint, 2002:409 [immatures].

Hydropsyche davisorum (Ross and Unzicker): Botosaneanu, 1996:18, figs. 42–47 [♂, ♀].

This species appears to be restricted to intermediate elevations in the Cordilleras Septentrional and Central. It was described from Elias Piña Province and recorded from Duarte Province and here from Baoruco and Dajabón Provinces. The record of a single female from La Descubierta, Independencia Province is questionable (Botosaneanu, 1996). We are unable to find diagnostic characters in the clasper groove and receptacle between this species and *S. parander*. The locality of La Descubierta is below sea level and midway between the known ranges of these two species and thus not strongly supportive of either identification. Males will be required to verify its identity.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 7 August 1990, Rawlins & Thompson, 1♀ (CMNH). **Baoruco Province:** Sierra de Neiba, Los Guineos on upper Río Colorado, 18°35'N, 71°11'W, 630 m, 11–12 August 1990, Rawlins & Thompson, 38♀ (CMNH, NMNH). **Dajabón Province:** 9 km S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 1♂, 2♀ (CMNH). 13 km S Loma de Cabrera, ca. 400 m, 20–22 May 1973, D. & M. Davis, 2♀ (NMNH). **Elias Piña Province:** north slope Sierra de Neiba, 2 km SW Canada, 7 km WSW Hondo Valle, 18°42'N, 71°45'W, 980 m, 29 August 1995, Rawlins et al., 8♂, 9♀ (CMNH, NMNH). Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 18♂, 18♀ (FSCA, NMNH). **Independencia Province:** Río Guyabal, 4.5 km N Postre Río, 150 m, 18°34.7'N, 71°37.7'W, 25 March 1999, O.S. Flint, 1♂, 10♀, plus 18 larvae, 4 pupae, 1♂, 1♀ metamorphotypes

(NMNH). **San Juan Province:** 7 km N Arroyo Caño, 1 km S Los Frios, 18°52'N, 71°01'W, 1120 m, 1 September 1995, Rawlins et al., 9♂, 3♀ (CMNH, NMNH).

Streptopsyche parander (Botosaneanu)

Hydropsyche parander Botosaneanu, 1996:19, figs. 48–53 [♂, ♀].

Streptopsyche parander (Botosaneanu): Flint et al., 1999:76 [nomenclature]; Flint, 2002:409 [larva, pupa].

This is a species restricted to the Sierra de Baoruco, and has so far only been found in the Dominican Republic, but most assuredly must occur in the Massif de la Selle in Haiti. It is known from the three Provinces which encompass this Sierra: Barahona, Independencia, and Pedernales. At first it was thought that this might be a synonym of *C. batesi* known from a female from this range in Haiti. However, study of the type of *C. batesi* shows beyond doubt that it is a different species, and belongs in *Calosopsyche* close to *C. carinifera*.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province:** San Rafael, 8.3 km S Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 22 March 1999, Flint, 4♂, 8♀ (NMNH). Confluence of Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 12♂, 55♀ (CMNH, NMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 59♂, 248♀ (CMNH, NMNH). Río Nizaito, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint, 2♂, 11♀, 68 larvae, 7 pupae, 2♂ metamorphotypes (NMNH). Nr. Filipinas, Larimar Mine, 3300 ft [ca. 1000 m], 6–11 July 1993, Woodruff, 2♂ (FSCA); same, but 12 April 1997, 1♂, 1♀ (FSCA); same, but 20–26 June 1992, Woodruff & Skelley, 1♂, 1♀ (FSCA); same, but 26 June–7 July 1992, 5♂, 1♀ (FSCA, NMNH). **Independencia Province:** Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 6♂, 5♀ (NMNH). Loma de Vientos, 4 km S Los Pinos, 18°35'N, 71°46'W, 475 m, 12 October 1991, Rawlins et al., 4♀ (CMNH). **Pedernales Province:** 14.5 km N Cabo Rojo, 18°03'N, 71°39'W, 165 m, 20 July 1990, Rawlins et al., 1♀ (CMNH). 26 km N Cabo Rojo, 18°06'N, 71°38'W, 730 m, 20 July 1990, Rawlins et al., 4♂, 4♀ (CMNH, NMNH). 21 km N Cabo Rojo, Las Mercedes, 490 m, 10 July 1987, Rawlins & Davidson, 1♀ (CMNH). Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 18 March 1999, Flint, 3♂, 10♀, 18 larvae, 2 pupae, 1♂ metamorphotype (NMNH); same, but 20 March 1999, 5♀ (NMNH). Stream & falls, 19 km N Pedernales, 230 m, 18°09.2'N, 71°44.8'W, 19 March 1999, Flint, 2♀ (NMNH).

Streptopsyche rawlinsi Flint and Sykora, **new species** (Fig. 12)

This species is related to both *S. parander* and *S. davisorum*. It is most easily distinguished from both by the structure of the endophallus. In *S. parander* this lobe is continuous with the phallobase and is long, ribbon-like and with a single apical point. In *S. davisorum* the endophallus is differentiated from the phallobase, as it is in *S. rawlinsi*, and bears two ventrally directed points. However, these points are much larger, nearly equal in size and separated by a deep sinus in *S. davisorum*; in *S. rawlinsi* they are quite small and the margin between them is slightly convex. There does not seem to be any absolutely diagnostic structure in the female clasper groove-receptacle complex that will distinguish the three species.

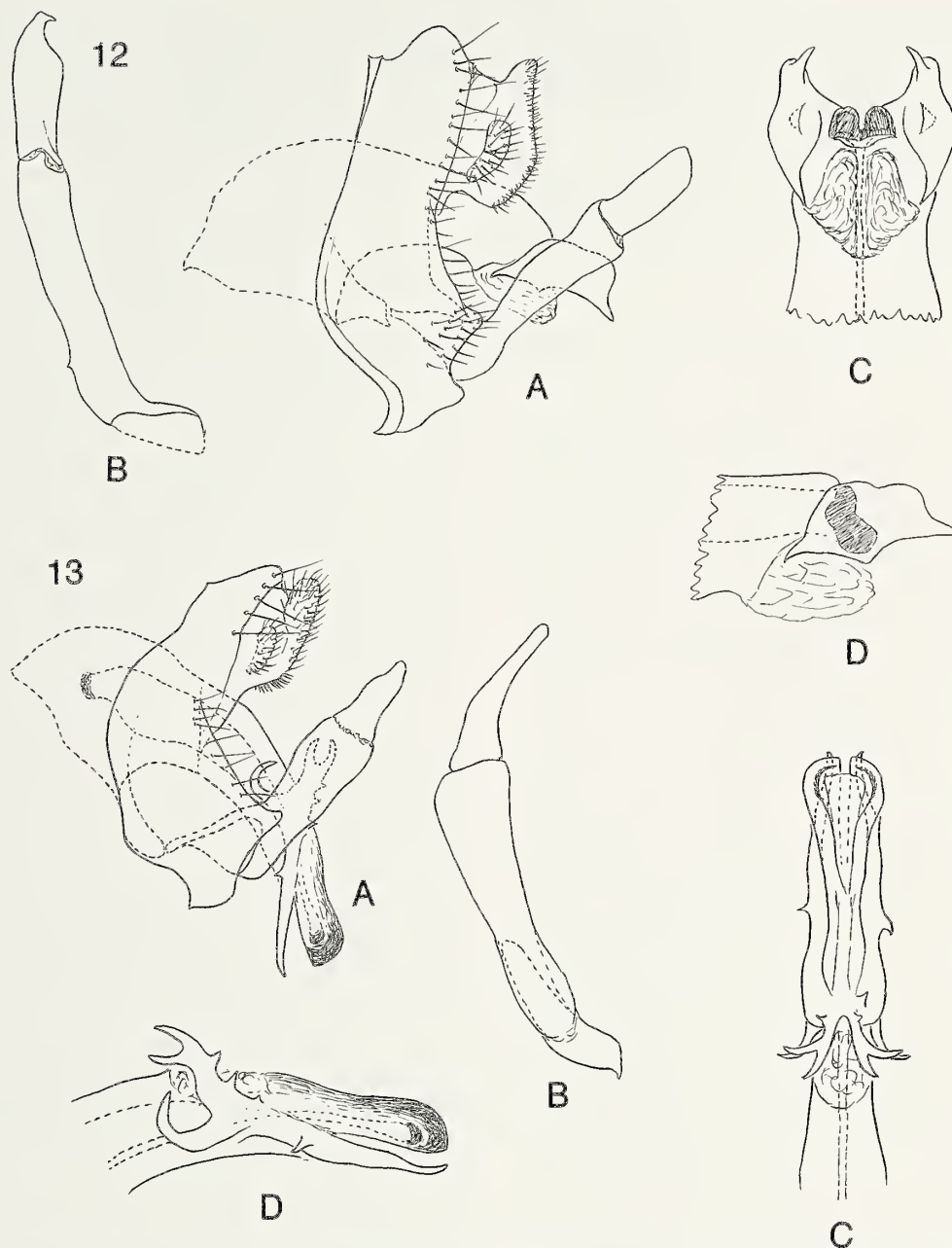


Fig. 12.—*Streptopsyche rawlinsi* new species, male genitalia: A, Lateral. B, Inferior appendage, posteroventral. C, Tip of phallus, ventral. D, Tip of phallus, lateral.

Fig. 13.—*Streptopsyche praecipua* new species, male genitalia: A, Lateral. B, Inferior appendage, posteroventral. C, Tip of phallus, dorsal. D, Tip of phallus, lateral.

Adult Male.—Length of forewing, 11 mm. Color grayish-brown; venter and legs pale brown; forewing grayish-brown, densely maculate with small, pale brown spots. Genitalia: Tenth tergum with warts *a* and *c* confluent along posterior margin of tergum, projecting apicodorsad, wart *b* elongate, distinct. Inferior appendage with basal segment straight, dorsal margin sinuate in lateral aspect; apical segment in ventral aspect with mesal

margin convex, apex produced into small truncate lobe with tip pointed mesad. Phallus inflated basally; endophallus produced into short, pointed lobes apicoventrally and basoventrally; phallotremal sclerites elongate, oblique, peanut-shaped.

Female.—Length of forewing, 12.5 mm. Color grayish-brown; marked as in male. Genitalia: Ninth segment very broad ventrally. Clasper groove with anterior margin

overhanging groove, filled with minute setate tubercles. Clasper receptacle deep, ovoid; ventral margin overhanging groove with dorsally directed carina and small flap posteriad of carina (not securely different from structures of *S. davisorum* and *S. parander*).

Type Material.—Holotype, male: **HAITI, Département du Sud**: S slope Morné Formon, Ville Formon, 31 km NW Les Cayes, Massif de La Hotte, 18°20'N, 74°01'W, 1405 m, 7–8 September 1995, disturbed forest and fields, J. Rawlins, R. Davidson, G. Onore (CMNH). Paratype: Same data, 1♀ (CMNH).

Streptopsyche praecipua Flint and Sykora, **new species**
(Fig. 13)

This very odd species is related most closely to *S. antilles* (Ross and Palmer), based on the endothecal process being developed into long apicoventral and basodorsal lobes. It is most easily recognized by the basodorsal lobe of the endothecal process being deeply divided and the endotheca itself being greatly produced beyond the insertion of its process.

It is quite possible that this is the male of the species described as *S. bohio* (Botosaneanu). The two types were taken only about 25 km apart, however, there is no firm evidence of this yet and until there is, it seems most advantageous to consider them distinct.

Adult Male.—Length of forewing, 9 mm. Color brown; venter and legs yellowish-brown; forewing brown, densely maculate with small, whitish spots. Genitalia: Tenth tergum with warts *a* and *c* confluent along posterior margin of tergum, projecting apicodorsad, wart *b* elongate, distinct. Inferior appendage with basal segment comparatively short, dorsal margin barely sinuate in lateral aspect; apical segment in ventral aspect tapering to elongate slender apex. Phallus inflated basally; endothecal process produced into long, slender lobe with basolateral tooth, and running posteriad beneath endotheca, basodorsal lobe bearing strong, hooklike ventral process curved dorsad and dorsal arm bifid apically, with several small teeth (opposite sides different in number and placement); endotheca produced into long tube divided apically into cuplike lobes; phallotremal sclerite small, inconspicuous.

Female.—Unknown.

Type Material.—Holotype, male: **HAITI, [Département de l'Ouest]**: Manneville, Feb 6–10 1922, about 60 ft. alt. [ca. 18 m], F. 4629. L. (AMNH).

Genus *Smicridea* McLachlan

This is a very large genus, exclusively of New World distribution. It is divided into two subgenera, the typical subgenus and the subgenus *Rhyacophylax*. They are both found on the continent from the southwestern United States south into Argentina and Chile. The typical subgenus is found on all the larger Greater and Lesser Antillean islands, but *Rhyacophylax* is not found on any of the Antillean islands. All the Greater Antillean species belong to the *S. fasciatella* Group, within which the

specific characters are limited to small differences in the genitalia and, sometimes, coloration. In addition to the five species listed here, there is a single female (MCZ) in poor condition from the Cordillera Central that appears to be yet another species. The immature stages are well known (Flint, 1964, 1968a; Wiggins, 1996).

Smicridea (Smicridea) brunnescens
Flint and Sykora, **new species**
(Fig. 14)

This is the only brown species yet discovered on Hispaniola. It thus resembles the Jamaican *S. jamaicensis* Flint, which it was thought to be for many years. Comparison of the genitalia of the two species shows that they are distinctly different. The inferior appendages in *S. jamaicensis* are distinctly angled in ventral aspect near the base, but evenly curved in *S. brunnescens*. The lateral wart on the tenth tergum in *S. brunnescens* protrudes more strongly and is rounded in lateral aspect at its base. The phallotremal sclerite is very similar in the two species but the short basal rods are divergent in *S. brunnescens*, and appressed in *S. jamaicensis*.

Adult Male.—Length of forewing, 5.5–6 mm. Color brown; venter and legs slightly paler brown; forewing brown, inconspicuously maculate with paler marking. Abdomen with four internal, reticulate sacs, each about as long as its segment. Genitalia: Ninth segment with anterior margin in lateral view vertical centrally, curving posteriad both dorsally and ventrally. Tenth tergum with tip in lateral aspect slightly produced dorsad, obliquely truncate in dorsal aspect; lateral wart rounded anteriorly in lateral aspect and protruding anteriorly in dorsal aspect. Inferior appendage with basal segment straight, slightly inflated apically in lateral aspect, evenly curved from base in ventral aspect; apical segment elongate, parallel-sided, apex obliquely truncate with small tuft of setae. Phallus tubular, curved almost directly posteriad from base; phallotremal sclerites elongate, ribbon-like in lateral aspect; with broad apicolateral “wings” in ventral aspect and with pair of small, divergent, rod-like processes anteromesally.

Female.—Length of forewing, 6–7 mm. Color brown; marked as in male. Genitalia: Ninth segment broad ventrally. Clasper groove not developed; receptacle shallow, cuplike, dorsal margin open, near posteroventral margin of segment.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, [La Vega Province, Río Jimenoa]**: Jarabacoa, 3–4 June 1969, Flint & Gómez (NMNH). Paratypes: Same data, 12♂, 31♀ (NMNH, CMNH). **Río Camú**, 19 km NE Jarabacoa, 12 June 1969, Flint & Gómez, 1♀ (NMNH). **Valle Nuevo**, SE Constanza, c. 7,000 ft. [2135 m], August 1938, Darlington, 1♀ (MCZ). **Dajabón Province**: **Río Massacre**, Balneario Don Miguel, 7 km SW Dajabón, 40 m, 26 May 1973, D. and M. Davis, 4♀ (NMNH). **Eliás Piña Province**: **Río Limpio**, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 1♂, 2♀ (FSCA). **Puerto Plata Province**: Los Hidalgos, 4–5 June 1969, Flint & Gómez, 1♀ (NMNH).

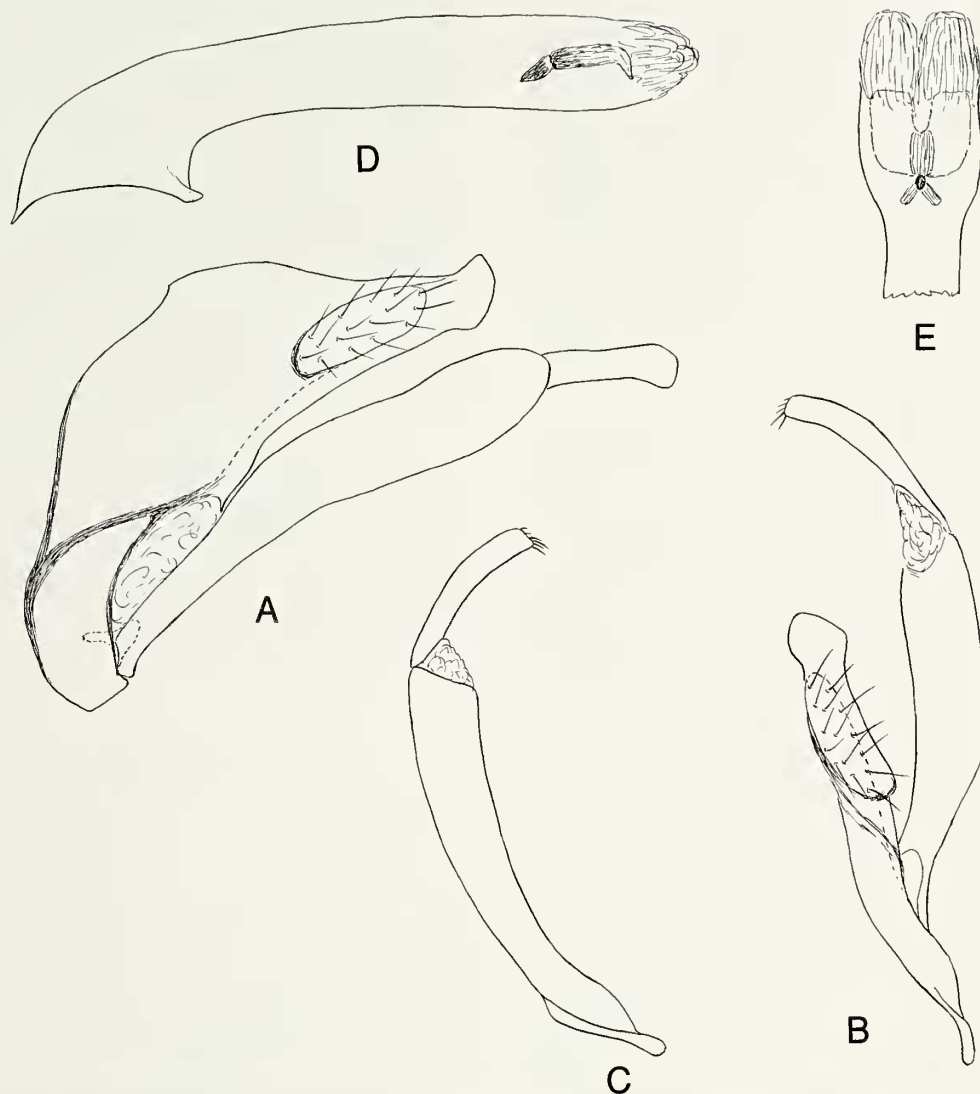


Fig. 14.—*Smicridea (S.) brunescens* new species, male genitalia: A, Lateral. B, Tenth tergum and inferior appendage, dorsal. C, Inferior appendage, posteroventral. D, Phallus, lateral. E, Tip of phallus, ventral.

Smicridea (Smicridea) comma Banks

Smicridea comma Banks, 1924:451. Flint, 1967:14, figs. 59, 60 [♂]; Kumanski, 1987:12, fig. 8 [♂, ♀, Haiti]; Botosaneanu, 1991a:133 [Haiti]; Botosaneanu, 1996:15 [Dominican Republic].

Originally described from Cuba where it is very frequent and abundant, it has been recorded recently from Haiti and the Dominican Republic. The species seems to be equally frequent and abundant on Hispaniola. It is recorded from Duarte, Monte Plata, Independencia, Pedernales and we here add Azua, Barahona, Dajabón, El Seibo, Hato Mayor, La Vega, Puerto Plata, San Cristóbal, and San Juan Provinces.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 43♂, 28♀ (CMNH); same, but 7 August

1990, 60♂♂♀ (CMNH). **Barahona Province:** Río Yaqui del Sud [sic.], 25 m from mouth, 18 September [1938?], Darlington, 1♀ (MCZ). Río Nizaito, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint, 1♂ (NMNH). 24 km E Barahona, 27 September 1985, Woodruff & Stange, 3♂, 10♀ (FSCA). **Dajabón Province:** 9 km S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 7♂, 8♀ (CMNH). Río Massacre, Balneario Don Miguel, 7 km SW Dajabón, 40 m, 26 May 1973, D. & M. Davis, 79♂, 40♀ (NMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 3♂, 3♀ (FSCA). **El Seibo Province:** Río Quisibani, E El Seibo, 18°45.3'N, 68°55.7'W, 12 May 1995, Flint, 10♂, 5♀ (NMNH). Loma Cocuyo, 6 km N Pedro Sánchez, 18°55'N, 69°07'W, 475 m, 4 July 1992, Rawlins et al., 13♂, 20♀ (CMNH). Hotel Santa Cruz, 28 May 1985, Woodruff & Stange, 1♀ (FSCA). Río Chavón, 17 km SE El Seibo, 28 May 1985, Woodruff & Stange, 50♂♂♀ (FSCA). Pedro Sánchez, small stream, 10 June 1976, Woodruff, 50♂♂♀ (FSCA). **Hato Mayor Province:** Parque Los Haitises, E of Trepada, 12 km E El Valle, 18°59'N, 69°30'W, 145 m, 6 July 1995, Rawlins et al., 100♂♂♀ (CMNH). **Independencia Province:** Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March

1999, Flint, 2♂, 2♀ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 15♂, 8♀ (NMNH). **La Altagracia Province:** 2 km E Nisibón, Río Nisibón, 12 June 1986, Woodruff & Stange, 100 ♂♂ ♀♀ (FSCA). Nisibón, "Papagallo", 16–19 June 1998, Woodruff & Freytag, 1♀ (FSCA); same, but 16–19 June 1999, Woodruff & Baranowski, 1♀ (FSCA). La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 50 ♂♂ ♀♀ (FSCA). **La Vega Province:** Jarabacoa, 3–4 June 1969, Flint & Gómez, 4♀ (NMNH). Río Baiguata, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 4♂, 5♀ (NMNH); same, but 19–21 May 1995, 4♂, 5♀ (NMNH). Río Camú, 19 km NE Jarabacoa, 12 June 1969, Flint & Gómez, 21♂, 28♀ (NMNH). Bayacanes, 120 m, 24 July 1987, Rawlins & Davidson, 1♂, 2♀ (CMNH). **Monseñor Nouel Province:** Bonaó, Hotel Jacaranda, 27–28 June 1988, Woodruff & Baranowski, 50 ♂♂ ♀♀ (FSCA); same, but 28–30 June 1999, 4♂, 8♀ (FSCA); same, but 18 April 2000, Woodruff & Henry, 50♂, 70♀ (FSCA). 12 km W Rt. 1 on Constanza Rd., 30 June 1999, Woodruff, 1♂ (FSCA). **Monte Cristi Province:** Monte Cristi, 4 June 1986, Miller & Stange, 10♂, 25♀ (FSCA). 3 km N Villa Elisa, 1 October 1985, Woodruff & Stange, 9♂, 7♀ (FSCA). **Monte Plata Province:** Bayaguana, 22 August–2 September 1991, Brown, 30 ♂♂ ♀♀ (FSCA). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 8♂, 5♀ (NMNH); same, but 18 March 1999, Flint, 47♂, 48♀ (NMNH); same, but 20 March 1999, 11♂, 22♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 148♂, 108♀ (CMNH). Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 4♂, 8♀ (NMNH). Km 15, N Cabo Rojo, 850 ft [260 m], 11 April 2000, Woodruff & Henry, 1♂, 1♀ (FSCA). 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 1♀ (FSCA). Km 21, N Cabo Rojo, 1200 ft [365 m], 1 July 1998, Woodruff & Baranowski, 8♂, 14♀ (FSCA). 23.5 km N Cabo Rojo, 18°06'N, 71°38'W, 540m, 20 July 1990, Rawlins et al., 1♂ (CMNH). K 24, N, Cabo Rojo, 3000 ft [915 m], 2 July 1998, Woodruff & Baranowski, 2♂ (FSCA); same, but 23 June 1999, 1♀ (FSCA). 5 km N Mercedes, 24 June 1999, Woodruff & Baranowski, 1♂, 3♀ (FSCA). **Peravia Province:** 8 km W Baní, 25 May 1985, Woodruff & Stange, 8♂, 7♀ (FSCA). **Puerto Plata Province:** Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 5♂, 6♀ (NMNH). Los Hidalgos, 4–5 June 1969, Flint & Gómez, 24♂, 29♀ (NMNH). **San Cristóbal Province:** La Toma, July 1969, Maldonado, 1♂, 1♀ (NMNH); same, but N of San Cristóbal, 9–10 June 1969, Flint & Gómez, 17♂, 14♀ (NMNH). Hato Dumas, 21 October 1986, Woodruff & Frank, 50 ♂♂ ♀♀ (FSCA). La Trinidad, NE Sierra de Agua, 2 May 1978, Woodruff et al., 13♂, 11♀ (FSCA). **San Juan Province:** Presa de Sabaneta, 11 km WNW Hato Nuevo, 1 km SE Ingenito, 19°02'N, 71°18'W, 610 m, 31 August 1995, Rawlins et al., 1♀ (CMNH). Río Mijo, 20 May 1985, Woodruff & Stange, 11♂, 10♀ (FSCA); same, 22 May 1985, Woodruff & Nuñez, 30 ♂♂ ♀♀ (FSCA). 1 km off rd. to Vallejuelo at river, El Capá, 21 May 1985, Woodruff & Stange, 7♂, 11♀ (FSCA). **Santiago Province:** Santiago (NW Arroyo), 25 April 1978, Woodruff, 1♂ (FSCA).

Smicridea (Smicridea) banksi Flint
(Fig. 15)

Smicridea unicolor Banks, 1938:303, fig. 25 [♂; secondary junior homonym].

Smicridea banksi Flint, 1967:13, figs. 61–63 [new name for *S. unicolor* Banks 1938, lectotype ♂]. Botosaneanu, 1996:15 [Dominican Republic].

This species was originally described from the La Selle Range in Haiti and recently recorded from the adjacent Province of Pedernales in the Sierra de Baoruco. We give here new, more detailed figures of the male genitalia of the lectotype to help with the recognition of this and closely related species, and fully discuss them under *S. duarte* n. sp. The type series is now faded to a dark, reddish-brown, but a faint indication of a very narrow

white, transverse band is apparent on the forewing, but no opalescent hairs nor white apical fringe are evident. The coloration for this species recorded under *S. duarte* is from the fresh material here recorded.

The new series listed here were taken at the eastern end of the Cordillera Central whereas the types are from a southern range in Haiti. However, *S. duarte*, which varies very little, is known from the Sierra de Baoruco, the Cordillera Central and the Cordillera Septentrional. *Smicridea completa* was described from the coastal hills in the south central area and recorded now from the Central Cordillera and just inland of Pedernales near the Haitian border. Apparently all species have a widespread, but poorly known, distribution.

Material Examined.—HAITI. [Département de L'Ouest]: La Visite & vic., La Selle Range, 5–7000 ft [1525–2135 m], 16–23 September 1934, M. Bates, ♂ lectotype, 2♂, 1♀ paratypes (MCZ).

DOMINICAN REPUBLIC. **La Vega Province:** 15 km S Constanza, 3 Jun 1969, Flint and Gomez, 1♂ (NMNH). Convento, 12 km S Constanza, 6–13 Jun 1969, Flint and Gomez, 1♂, 2♀ (NMNH). **Monseñor Nouel Province:** nr. Jima [6.3 km W jct. Carretera Duarte and rt. 12], 19°01.2'N, 70°28.8'W, 670 m, 6 May 1995, Flint, 5♂ (NMNH, CMNH). La Vaca, 6km W Jayaco, 2 Jun 1969, Flint and Ortiz, 4♂ (NMNH).

Smicridea (Smicridea) completa Banks
(Fig. 16)

Smicridea completa Banks, 1941:398, fig. 25 [♂]. Flint, 1967:14, figs. 64, 65 [♂].

The lectotype of this species, here figured, is from Villa Altagracia, a region of low hills and now mostly transformed by agriculture. The abdomen of the female paratype has been cleared and compared with the cleared genitalia of the example from Constanza and a specimen from Río Mulito: all have been found to be in substantial agreement. The example from Constanza may well have been the one listed by Banks in his original description. It no longer carries any type indication as is usual with all examples in a type series from the MCZ. See the comments under *S. duarte* for distinctive characteristics of this species.

Material Examined.—DOMINICAN REPUBLIC. [La Vega Province]: Constanza, 3–4000 ft. [915–1220 m], August 1938, Darlington, 1♀ (MCZ). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 57♂, 35♀ (NMNH); same, but 18 March 1999, 95♂, 48♀ (NMNH, FSCA); same, but 20 March 1999, 44♂, 31♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 274♂, 86♀ (CMNH). Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 13♂ (NMNH). [San Cristobal Province]: Villa Altagracia, July 1938, Darlington, ♂ lectotype, 1♀ paratype (MCZ).

Smicridea (Smicridea) duarte
Flint and Sykora, new species
(Fig. 17)

This species is very closely related to *S. banksi* and *S. completa*. We give here the differences apparent to us

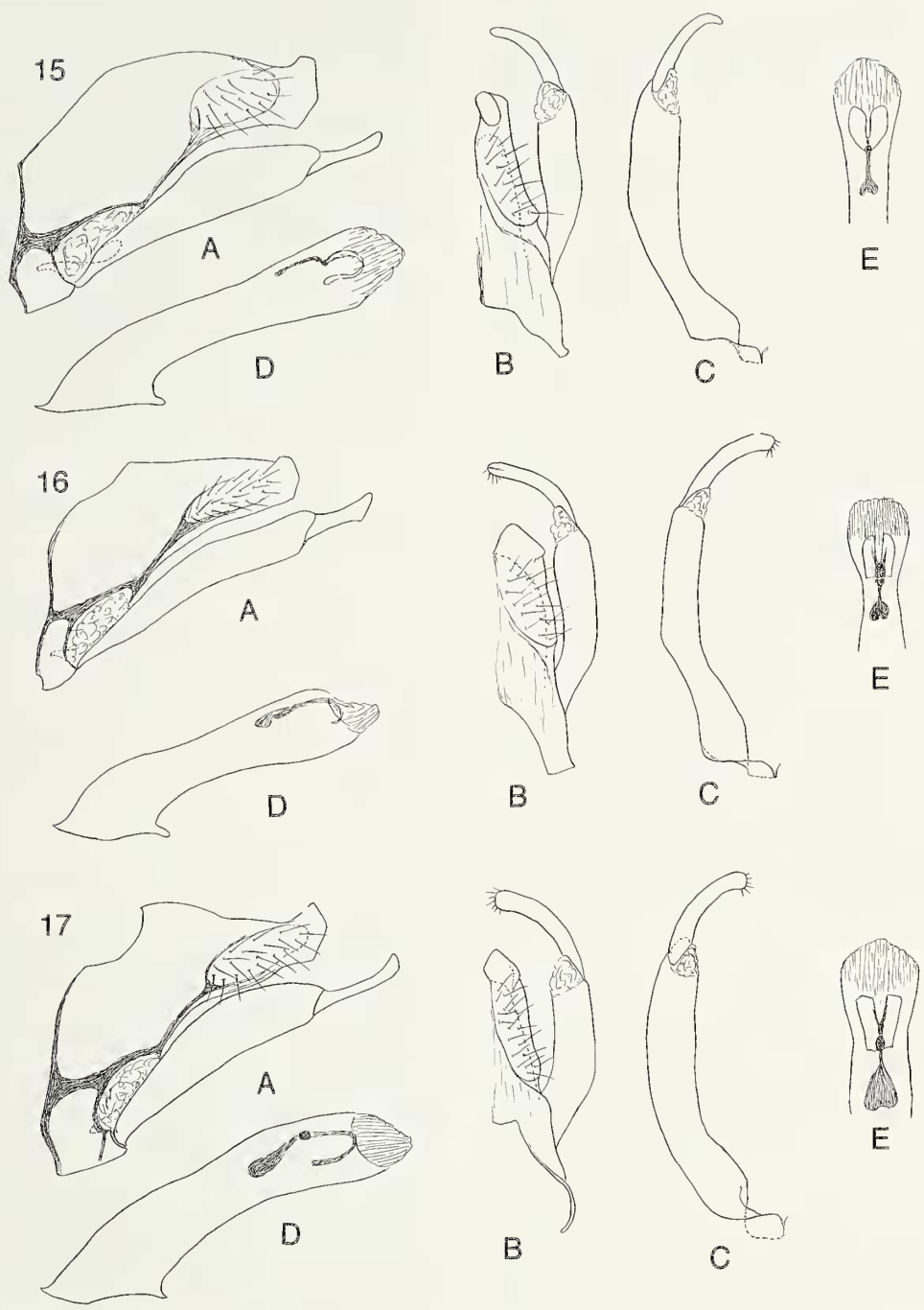


Fig. 15.—*Smicridea (S.) banksi* Flint, male genitalia: A, Lateral. B, Tenth tergum and inferior appendage, dorsal. C, Inferior appendage, posteroventral. D, Phallus, lateral. E, Tip of phallus, dorsal.

Fig. 16.—*Smicridea (S.) completa* Banks, male genitalia: A, Lateral. B, Tenth tergum and inferior appendage, dorsal. C, Inferior appendage, posteroventral. D, Phallus, lateral. E, Tip of phallus, dorsal.

Fig. 17.—*Smicridea (S.) duarte* new species, male genitalia: A, Lateral. B, Tenth tergum and inferior appendage, dorsal. C, Inferior appendage, posteroventral. D, Phallus, lateral. E, Tip of phallus, dorsal.

among the species of this complex. All three are basically fuscous with a narrow, transverse band of white hair at 3/4 of the forewing length. However, *S. banksi* has a broad, diffuse band of opalescent hair midway between the white

band and the wing base, and the apical fringe either dark or white. In *S. completa* the opalescent hairs cover the entire basal half of the forewing, and there is a second large area of purplish, opalescent hair between the white

band and the apex which has a white fringe. *Smicridea duarte* has three bands of opalescent hair, one at the forewing base, the second midway between the base and the white band and the last just apicad of the white band. The apex has a white fringe.

In the male genitalia the anterior margin of the ninth segment in *S. duarte* is deeply concave dorsally, barely so in *S. completa* and oblique and straight in *S. banksi*. The tip of the tenth tergite in dorsal aspect is very oblique and produced into a small lateral angle in *S. duarte*; is oblique and broad with a definite lateral angle in *S. completa*, and is barely oblique and produced into a dorsomesal knob in *S. banksi*. The lateral wart of the tenth tergite in lateral aspect in *S. duarte* and *S. completa* is at least three times as long as broad, but less than twice as long as broad in *S. banksi*. The basal segment of the inferior appendage in lateral aspect is inflated subapically in both *S. duarte* and *S. banksi*, but parallel-sided in *S. completa*. The apical segment of the inferior appendage in posteroventral aspect in *S. duarte* is rounded, in *S. completa* is more truncate, and in *S. banksi* tapers to a narrow, rounded point. The phallus seems to curve from the base into the stem in *S. banksi* and *S. completa*, but runs directly from base into stem in *S. duarte*. The phallotremal sclerite in *S. banksi* and *S. completa* has a relatively short expanded portion basally, but this expanded portion is much longer in *S. duarte*, extending almost to the apical "wings".

Adult Male.—Length of forewing, 5–5.5 mm. Color fuscous; midfemur with white hair, midtarsi stramineous; forewing fuscous, with narrow, transverse, white stripe at 3/4 length (not notably widened on costal margin), and three bands of opalescent hair, one at forewing base, second midway between base and white stripe, last just apicad of white band, apex with white fringe. Abdomen with four internal, reticulate sacs, each about 1.5 times as long as its segment. Genitalia: Ninth segment in lateral aspect with anterior margin vertical centrally, deeply concave dorsally. Tenth tergum with tip in lateral aspect produced dorsad, oblique in dorsal aspect with small lateral angle; lateral wart about 3 times as long as broad, anterior angle pointed in lateral aspect. Inferior appendage with basal segment straight, slightly inflated apically in lateral aspect, with slight basomesal angle in ventral aspect; apical segment elongate, parallel-sided, apex rounded with small tuft of setae. Phallus tubular, angled posteriad directly from base; phallotremal sclerites elongate, ribbon-like in lateral aspect; with broad apico-lateral "wings" in dorsal aspect and with elongate anteromesal sclerite gradually widening anteriorly.

Female.—Length of forewing, 5.5–6 mm. Color fuscous; marked as in male. Genitalia: Ninth segment broad ventrally. Clasper groove slightly impressed, curved, with rugosities as it enters receptacle; receptacle triangular in outline, anterior margin open, at posteroventral angle of segment.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC**. [La Vega Province]: Río Baiguante, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, O.S. Flint (NMNH). Paratypes; same data 5♂, 5♀ (NMNH, CMNH); same, but 19–21 May 1995, 2♂, 4♀ (NMNH); same, but 14–17 May 1998, W.N. Mathis, 2♂, 1♀ (NMNH), 5 km S Jarabacoa, 19°05.8'N, 70°36.5'W, 640 m, 8–20 May 1995, W.N. Mathis, 1♀ (NMNH). Salto Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, O.S. Flint, 3♂, 2♀ (NMNH). La Palma, 12 km E El Río, 2–13 Jun 1969, Flint & Gomez, 1♂ (NMNH). **Baoruco Province**: Sierra de Neiba, Los Guineos on upper Río Colorado, 18°35'N, 71°11'W, 630 m, 11–12 August 1990, Rawlins & Thompson, 1♀ (CMNH). **Barahona Province**: San Rafael, 8.3 km S Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 15 May 1995, O.S. Flint, 1♂ (NMNH); same, but 22 March 1999, 2♀ (NMNH). Ojeda, 17°58.2'N, 71°10.6'W, 22 March 1999, W.N. Mathis, 4♂, 1♀ (NMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 3♂, 9♀ (CMNH). Confluence Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 1♀ (CMNH). **Elias Piña Province**: Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 2♂, 3♀ (FSCA), 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. and M. Davis, 1♂, 1♀ (NMNH). **Independencia Province**: Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 6♂, 9♀ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, O.S. Flint, 10♂, 3♀ (NMNH). **Pedernales Province**: Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 3♀ (NMNH). **Peravia Province**: 10 km E San José de Ocoa, 18°35'N, 70°25.6'W, 21 May 1998, W.N. Mathis, 24♂ (NMNH). **Puerto Plata Province**: Sonador, 19°35.9'N, 70°36.2'W, 440 m, 18 May 1995, O.S. Flint, 6♂ (NMNH, CMNH); same, but W.N. Mathis, 1♂ (NMNH).

Other: **HAYTI** [sic.], Chipman, Holland Collection [no further data], 1♂ (CMNH).

Family Hydroptilidae Genus *Alisotrichia* Flint

This genus of exclusively New World distribution is found from the southwestern United States south through Central America into northern South America and south along the Andes at least to Peru. It is very diverse on the Antillean islands, each of the Greater Antillean islands having three to ten species (with one fossil known from Dominican amber, Wells and Wichard, 1989) and the Lesser Antillean islands one or two apiece. The immature stages of several species have been described (Bowles et al., 1999; Flint, 1964, 1970). All the larvae so far found have been taken in madicolous or hygropetric situations. The adults are quite active, running on rocks in the bright sun, but may also come to light at night.

Alisotrichia aglae Botosaneanu

Alisotrichia aglae Botosaneanu, 1991a:118, figs. 18–21 [♂].

The species was described from a single site in Haiti and no further records have been presented. It is here recorded from several sites in the Provinces of Barahona and Independencia.

Material Examined.—**DOMINICAN REPUBLIC**. **Barahona Province**: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley, 1♂ (FSCA). San Rafael, 8.3 km S Baoruco, 18°01.9'N,

71°08.4'W, 30 m, 22 March 1999, Flint, 1♂ (NMNH). **Independencia Province:** Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, O.S. Flint, 7♂ (NMNH, CMNH).

Alisotrichia aquaecadentis Botosaneanu

Alisotrichia aquaecadentis Botosaneanu, 1991a:116, figs. 7–11 [♂, ♀].

As is the case with the preceding species, this species was known only from a single site in Haiti. It is here recorded from the Province of Independencia, the first record from the Dominican Republic.

Material Examined.—**DOMINICAN REPUBLIC. Independencia Province:** Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 5♂ (NMNH, CMNH).

Alisotrichia arcana Botosaneanu

Alisotrichia arcana Botosaneanu, 1991a:124, figs. 29–36 [♂].

Another species described from a single site in Haiti, this one has not been recollected.

Alisotrichia bisetosa Flint and Sykora, **new species**
(Fig. 18)

This species and *A. circumata* from Puerto Rico appear to be closely related. Both have a strongly modified antennal scape and similar ventral structure of the ninth-tenth male genital segments. From *A. circumata*, *A. bisetosa* may be easily recognized by the modified male maxillary palpi, the structure of the eighth sternum with its second setiferous tubercle, and very broad, complex phallus.

As frequently happens in this genus, the true homologies of structures in the male genital capsule are incomprehensible. Thus homologies are only suggested and the differentiation of phallic and tenth tergal structures is unresolved.

Adult Male.—Length of forewing 2 mm. Color fuscous marked with silvery white hair on antenna, head, and mesothorax; forewing fuscous with white hair along anterior margin and in several obliquely transverse bands. Ocelli two. Scape greatly enlarged, covering face anteriorly, contiguous mesally, with ventromesal, cylindrical lobe, concave internally with internal surface “corrugate”; 15 segments beyond scape, basal segment of which twice as long as broad, other segments slightly broader than long, apical segment elongate, bearing apical nipple. Maxillary palpus with fifth segment tapering, conical; fourth segment flattened with enlarged setae laterally; third segment short, produced laterad and bearing tuft of large setae directed laterad; basal segments very short and hidden in hair. Spurs 0,2,4; hind tibia with elongate hair fringe; basal segment of hind tarsus longer than remaining segments, bearing tuft of very long setae. Seventh sternum with very small sclerotized process apicomesally. Genitalia: Eighth sternum bilobate, apically lacking enlarged setae; posterior margin dorsolaterally

with large lobe bearing dorsally very large, black seta; dorsal margin with small papilla bearing apically large, pale seta. Terminal complex (ninth and tenth segments and phallus) with long, slender lateral rods (from ninth segment?) reaching to seventh segment; dorsally with usual pair of parenthesis-like dark marks (on tenth segment?) with apices curving laterad and ventrad; in lateral aspect with apically liplike structure, basally developed in coiled manner; phallus basally flared, reduced to narrow neck, enlarged apically with complex internal structure (part of which may be associated tenth tergal structures).

Female.—Not associated with certainty.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Independencia Province:** Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, O.S. Flint (NMNH). Paratypes: Same data, 5♂ (NMNH). **Barahona Province:** Río Nizaïto, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, O.S. Flint, 2♂ (NMNH). Río Nizaïto, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 2♂ (CMNH). **Independencia Province:** La Descubierta, 3 August 1983, R.E. Woodruff, 1♂ (FSCA). **La Vega Province:** Constanza, 27 April 1978, Woodruff & Fairchild, 9♂, 2♀ (FSCA, NMNH).

Alisotrichia euphrosyne Botosaneanu

Alisotrichia euphrosyne Botosaneanu, 1991a:118, figs. 22–24 [♂].

One more species described from a single site in Haiti, it is now recorded from a site in Pedernales Province, Dominican Republic.

Material Examined.—**DOMINICAN REPUBLIC. Pedernales Province:** Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 1♂, 2♀ (NMNH).

Alisotrichia hiruopsis aitija Botosaneanu

Alisotrichia hiruopsis aitija Botosaneanu, 1995:22, figs 1–4 [♂].

The nomotypical subspecies is common on hygropetric situations in Puerto Rico. This subspecies of *A. hiruopsis* was described from the Province of Duarte. It has now been taken also in the Provinces of La Vega, Monseñor Noel and Peravia.

Material Examined.—**DOMINICAN REPUBLIC. La Vega Province:** Salto Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 9 May 1995, Flint, 6♂, 8♀ (NMNH, CMNH). 5 km W Manabao, Finca Eliado Fernandez “Paso la Perra”, along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 1♀ (FSCA). **Monseñor Noel Province:** 20 km W Bonao, Hydroelectric Plant, Río Blanco, 600 m, 13 May 2001, Woodruff & Nuñez, 5♂, 3♀ (FSCA). **Peravia Province:** 10 km E San José de Ocoa, 18°35'N, 70°25.6'W, 21 May 1998, Mathis, 5♂ (NMNH).

Alisotrichia hispaniolina Botosaneanu

Alisotrichia hispaniolina Botosaneanu, 1991a:116, figs 12–17 [♂, ♀]. Botosaneanu, 1995:23 [tentative record of a ♀].

A species known from a number of localities in Haiti, it was tentatively recorded from the Province of Pedernales in the Dominican Republic. We now confirm this

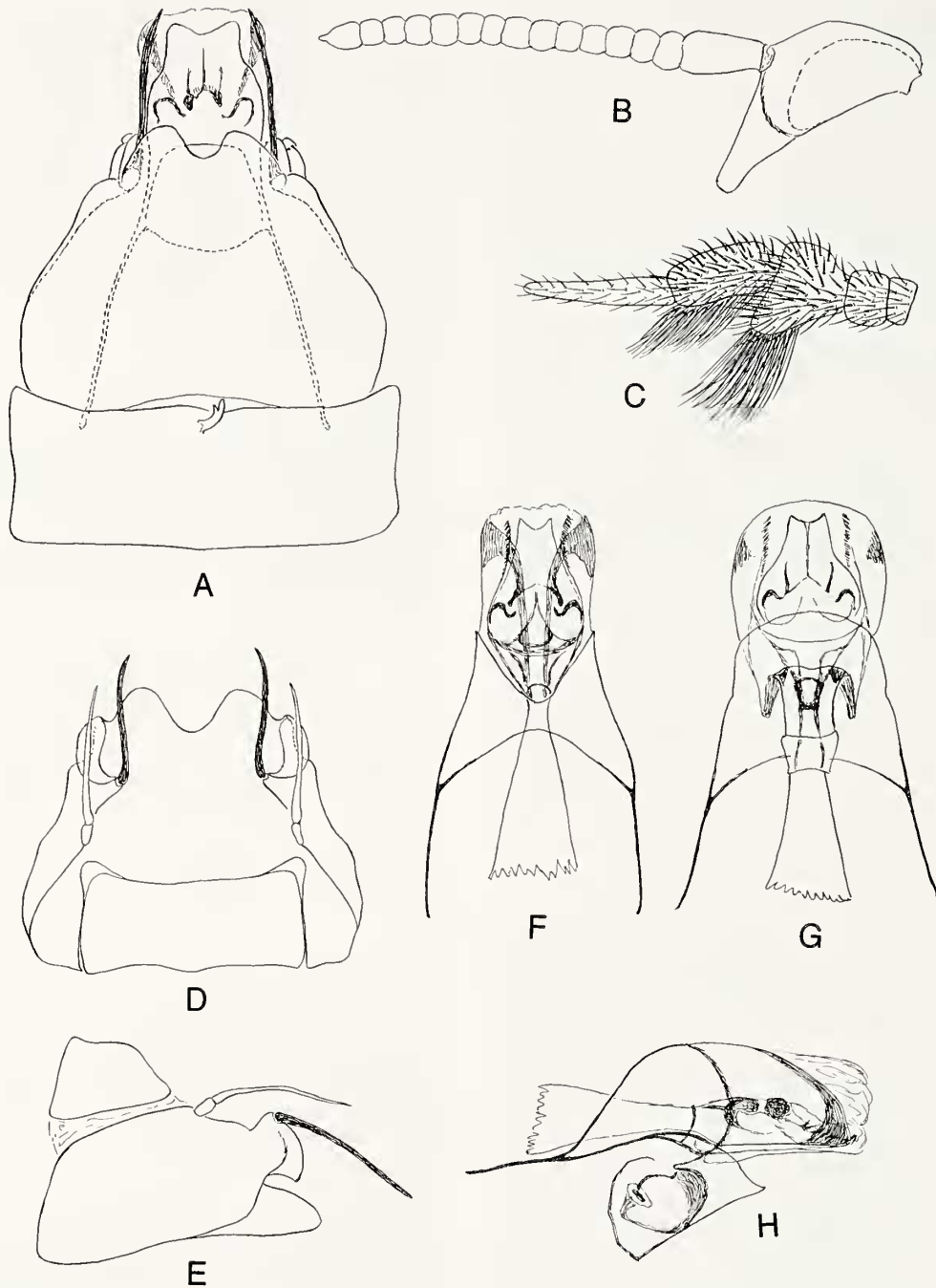


Fig. 18.—*Alisotrichia bisetosa* new species, male genitalia A. Ventral. B. Antenna, lateral. C. Maxillary palpus, lateral. D. Eighth segment, dorsal. E. Eighth segment, lateral. F. Ninth and tenth terga and phallus, dorsal. G. Ninth and tenth terga and phallus, ventral. H. Ninth and tenth terga and phallus, lateral.

provincial record and add the provinces of Azua, Barahona, and Independencia.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 67♂, 8♀ (CMNH, NMNH); same, but 7 August 1990, 4♂, 2♀ (CMNH). **Sec. Canoa, Mirador de la Presa, Yaqui del Sur,** 30 September 1978, Woodruff, 1♀ (FSCA). **Barahona Province:** Río Nizaïto, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint & Mathis, 69♂, 65♀ (NMNH). Río Nizaïto, 6

km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 4♂, 8♀ (CMNH). Confluence Río Nizaïto and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 6♂, 1♀ (CMNH). **Independencia Province:** Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 3♂ (NMNH). **Pedernales Province:** 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 10♂, 14♀ (FSCA, NMNH). N Cabo Rojo, km 21, 1200 ft. (365 m), 19 June 1976, Woodruff, 1♀ (FSCA); same, but 1 July 1998, Woodruff & Baranowski, 1♂, 3♀ (FSCA); same, but km 24, 3000 ft (915 m), 2 July 1998, 2♂, 1♀ (FSCA).

Alisotrichia thalia Botosaneanu

Alisotrichia thalia Botosaneanu, 1991a:120, figs 25–28 [♂].

Previously known from only one site in Haiti, we here record it from a site in the Province of Barahona in the Dominican Republic.

Material Examined.—DOMINICAN REPUBLIC. Barahona Province: San Rafael, 8.3 km S of Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 11 May 1995, Flint, 1♂, 3♀ (NMNH).

Alisotrichia woodruffi Flint and Sykora, new species (Fig. 19)

Although the male genitalia of this species are quite typical of many species in the genus, particularly the *A. orophila* Group, the combination of characters of the maxillary palpi, antennae, and eighth sternum render this species unique. The greatly broadened and cupped antennal flagellum greatly surpasses this condition seen in the Jamaican *A. tenuivirga* Botosaneanu or *A. uliua* n. sp., the only other Greater Antillean species with broadened flagellar segments and processes with long setae dorsally from the eighth sternum. *Alisotrichia hirudopsis* has antennae identically formed as *A. woodruffi*, but lacks the eighth sternal structures. Many species have modified male maxillary palpi, but generally the third not the fourth segment, as is the case in *A. tenuivirga* and *A. woodruffi*. However, *A. woodruffi* is unique among described Greater Antillean species in having a totally unornamented posterior margin of the eighth sternum. Details of the ninth and tenth segments and phallic complex also offer other distinctive characteristics, especially the hooked subgenital process.

Adult Male.—Length of forewing 2 mm. Color fuscous in alcohol. Ocelli 2. Scape greatly enlarged, covering face anteriorly, contiguous mesally, with broad ventral lobe bearing brush of long setae anteroventrally, concave dorsally with internal corrugate sac; 15 segments beyond scape, basal segment of which longer than broad, segments 5–8, especially, much broader than long, concave mesally, inner and outer faces covered with short, spatulate setae, apical segment elongate, bearing apical nipple. Maxillary palpus with fifth segment tapering, conical; fourth segment flattened and broadened apicolaterally, third segment elongate, terete; third and fourth segments covered with elongate, spatulate setae, especially on outer face; basal segments very short and hidden in hair. Spurs 0,2,4; hind tibia and tarsus distinctly hairy. Seventh sternum with very small apicomesal point. Genitalia: Eighth sternum bilobate apically, lacking enlarged setae; anterodorsally with long, slender lobe bearing very large, black seta. Terminal complex (ninth and tenth segments and phallus) with long, slender lateral rods (from ninth segment?) reaching to seventh segment; dorsally with usual pair of parenthesis-like dark marks (on tenth segment?) with apices curving laterad and ventrad; in lateral aspect, with structure produced apically and

basally into liplike process; with subgenital process, hooked ventrad in lateral aspect, crescentic in ventral aspect; phallus basally flared, reduced to narrow neck, enlarged at midlength with curved internal sclerite in lateral aspect, produced into slender apical plates, appearing as two parallel lines in dorsal aspect.

Female.—Not securely associated.

Type Material.—Holotype, male: DOMINICAN REPUBLIC. Monseñor Nouel Province [not La Vega as labelled]: 6km [not mi. as labelled] NW Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski (FSCA). Paratypes: Same data, 1♂ (NMNH).

Alisotrichia ultima Flint and Sykora, new species (Fig. 20)

This recently discovered, distinctive species appears to be related to *A. thalia* on the basis of the ornamentation of the eighth sternum, but the modifications of the head and legs are more a melange of those of *A. woodruffi* and *A. bisetosa*. The antennal structure is much like that of *A. woodruffi* but the scape has different modifications, the pedicel is simply cylindrical and the flattened segments are not so broad (actually much like those of *A. hindopsis* Flint 1964, Fig. 12D). The maxillary palpi are almost exactly like those of *A. bisetosa* (Fig. 18C). The hair tufts of the hind legs are like those of *A. bisetosa*, but there are also hair tufts on the midtibia. The apicolateral, pointed projection of the eighth sternum is much longer than in *A. thalia* and it is denticulate along the dorsal margin; the large seta this projection bears is identical in the two species. Unfortunately the internal structure of the ninth and tenth segments and the phallus is very faint and obscure in the type, although what can be discerned in lateral aspect looks much like that shown for *A. woodruffi*.

Adult Male.—Length of forewing 2 mm. Color fuscous in alcohol. Ocelli 2. Scape greatly enlarged, covering face anteriorly, contiguous mesally, and covered internally with short, scale-like setae, externally and especially ventrally with elongate, spatulate setae; pedicel elongate, cylindrical; 15 flagellar segments, segments 3–10, especially, much broader than long, concave mesally, inner and outer faces covered with short, spatulate setae, apical segment elongate, bearing apical nipple. Maxillary palpus with fifth segment tapering, conical; fourth segment flattened and broadened; third segment short, produced laterad and bearing tuft of large setae directed laterad; basal segments very short and hidden in hair. Spurs 0,2,4; midtibia with two very long hair brushes, one basally other apically; hindtibia apically and basal tarsal segment with long hair brushes. Seventh sternum with very small apicomesal point. Genitalia: Eighth sternum with posterolateral angle produced into elongate, pointed process curved mesad and bearing row of six small denticles dorsally, subapically bearing enlarged seta from venter; anterodorsally with long, slender lobe bearing very large, black seta. Terminal complex (ninth and tenth segments and phallus) with long, slender anterolateral

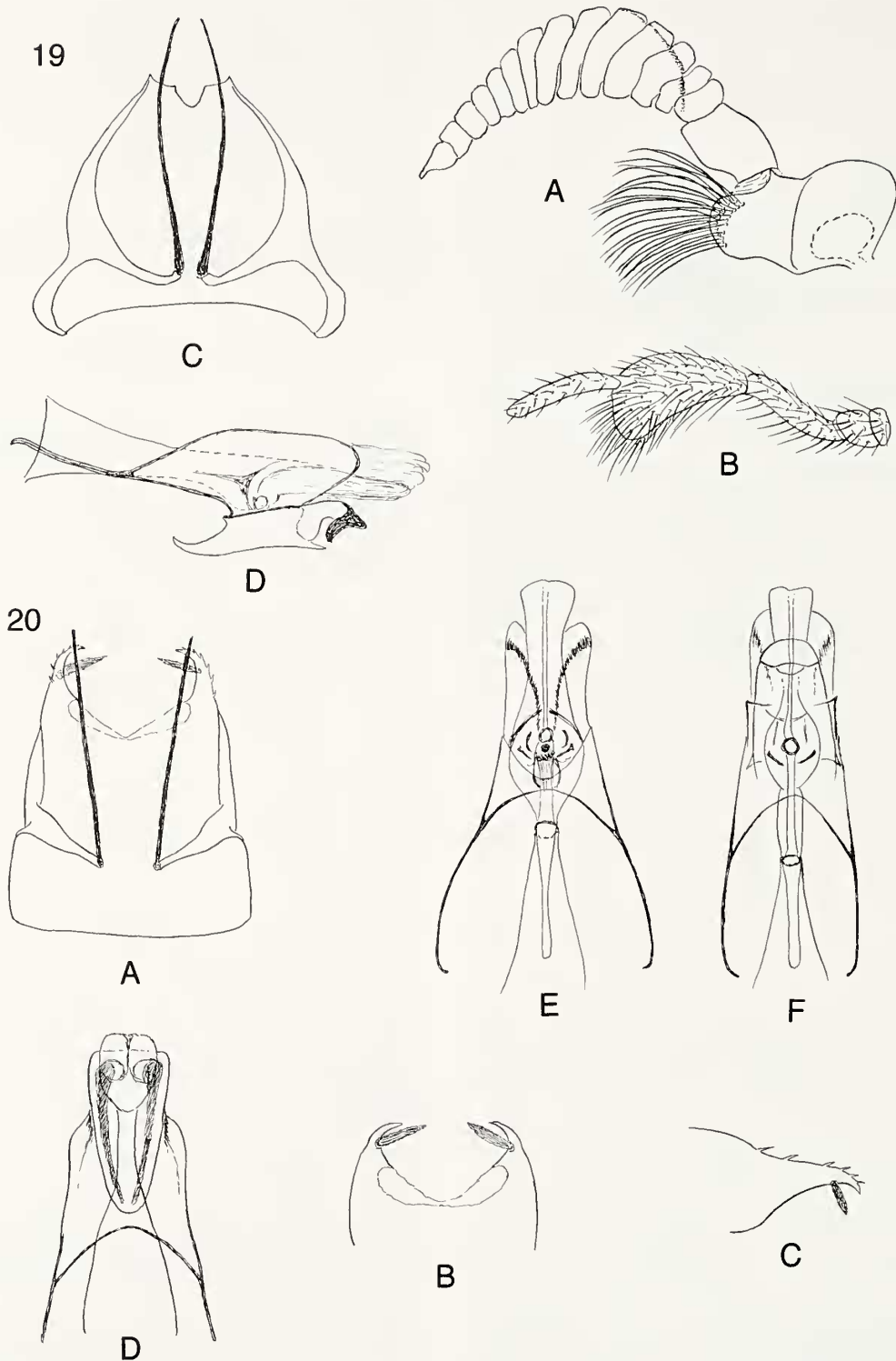


Fig. 19.—*Alisotrichia woodruffi* new species, male genitalia: A, Antenna, lateral. B, Maxillary palpus, lateral. C, Eighth sternum, dorsal. D, Ninth and tenth terga and phallus, lateral. E, Ninth and tenth terga and phallus, dorsal. F, Ninth and tenth terga and phallus, ventral.

Fig. 20.—*Alisotrichia ultima* new species, male genitalia: A, Eighth sternum, dorsal. B, Apex of eighth sternum, ventral. C, Apex of eighth sternum, lateral. D, Ninth and tenth terga and phallus, dorsal.

rods (from ninth segment?) reaching to seventh segment; dorsally with usual pair of parenthesis-like dark marks (on tenth segment?) with apices slightly enlarged; in lateral aspect, with a ventral structure produced apicad and basad into liplike process; with subgenital process, hooked ventrad in lateral aspect, crescentic in ventral aspect; phallus basally flared, reduced to narrow neck, enlarged before apex which is rounded and divided into elliptical, rounded hemispheres.

Female.—Unknown.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC**. **Azua Province**: Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, J. Rawlins, C. Young, S. Thompson, & R. Davidson (CMNH).

Genus *Hydroptila* Dalman

Hydroptila is a genus found in all regions of the world, with a very large number of species in both temperate and tropical areas. The larvae have been described a number of times (Nielsen, 1948; Wiggins, 1996). They make purse shaped cases constructed of either plant material or sand grains. They generally feed on filamentous algae by piercing the cells, but may also ingest other types of algae.

Hydroptila ditalea Flint

Hydroptila ditalea Flint, 1968a:46 [♂, ♀]. Botosaneanu, 1995:27 [Dominican Republic].

Originally described from Jamaica, the species has been recorded from Mexico, Ecuador and Peru as well as the Dominican Republic, where it was known from the provinces of Duarte, Independencia, La Vega, Monte Plata, and Pedernales. We add the provinces of Azua, Barahona, Dajabón, Elias Piña, El Seibo, La Altagracia, La Romana, Monseñor Nouel, Puerto Plata, San Cristobal, and San Juan.

Material Examined.—**DOMINICAN REPUBLIC**. **Azua Province**: Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 2♀ (CMNH); same, but 7 August 1990, 5♀ (CMNH). Sec. Canoa, Mirador de la Presa, Yaqui del Sur, 30 September 1978, Woodruff, 2♂ (FSCA). **Barahona Province**: 24 km E Barahona, 27 September 1985, Woodruff & Stange, 1♀ (FSCA). **Dajabón Province**: Río Massacre, Balneario El Salto, Loma de Cabrera, 222 m, 21–25 May 1973, D. & M. Davis, 2♀ (NMNH). **Elias Piña Province**: Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 23♂, 15♀ (FSCA). **El Seibo Province**: Río Quisibani, E El Seibo, 18°45.3'N, 68°55.7'W, 12 May 1995, Flint, 6♂, 57♀ (NMNH). Pedro Sanchez, small stream, 10 June 1976, Woodruff, 10♂, 46♀ (FSCA). **Independencia Province**: La Descubierta, 3 August 1983, Woodruff, 2♂, 1♀ (FSCA). Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 2♂, 6♀ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 5♀ (NMNH). **La Altagracia Province**: La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 3♂, 9♀ (FSCA). 2 km E Nisibón, Río Nisibón, 12 June 1986, Woodruff & Stange, 2♀ (FSCA). **La Romana Province**: La Romana, 16 September 1976, Folch, 2♀ (FSCA). **La Vega Province**: Río Baiguante, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 12♂, 62♀ (NMNH); same, but 19–21 May 1995, 10♂, 46♀ (NMNH). Río Camú, 19 km NE Jarabacoa, 12 June 1969, Flint & Gómez, 1♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°0.9'N, 70°33.5'W,

980 m, 7 May 1995, Flint, 1♀ (NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 2♂ (FSCA). **Monseñor Nouel Province**: Hotel Jacaranda, Bonao, 27–28 June 1998, Woodruff & Baranowski, 1♂, 2♀ (FSCA); same, but 18 April 2000, Woodruff & Henry, 1♂, 24♀ (FSCA). **Monte Plata Province**: Bayaguana, 22 August–2 September 1991, Brown, 2♀ (FSCA). **Pedernales Province**: Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 5♂, 6♀ (NMNH); same, but 18 March 1999, Flint, 1♂, 2♀ (NMNH). Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 1♀ (NMNH). 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 1♀ (FSCA). N Cabo Rojo, km. 21, 1200 ft [365 m], 1 July 1998, Woodruff & Baranowski, 4♀ (FSCA); same, but km. 24, 3000 ft (915 m), 2 July 1998, 1♀ (FSCA). **Puerto Plata Province**: Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 21♀ (NMNH). Los Hidalgos, 4–5 June 1969, Flint & Gómez, 2♀ (NMNH). **San Cristobal Province**: La Trinidad, NE Sierra de Agua, 2 May 1978, Woodruff et al., 1♀ (FSCA). **San Juan Province**: at river, 1 km off rd. to Vallejuelo, El Capá, 21 May 1985, Woodruff et al., 5♀ (FSCA). Río Mijo, 22 May 1985, Woodruff et al., 1♀ (FSCA).

Hydroptila dominicana Botosaneanu

Hydroptila dominicana Botosaneanu, 1995:27 [♂, ♀].

Originally described from the Dominican Republic, where it was recorded from the provinces of La Vega and Independencia. We add the provinces of Azua, Elias Piña, Pedernales, Puerto Plata, and San Juan. In addition, specimens have been taken in the Province of Cienfuegos in Cuba by Flint.

Material Examined.—**DOMINICAN REPUBLIC**. **Azua Province**: Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 11♂, 33♀ (CMNH); same, but 7 August 1990, 2♂ (CMNH). **Elias Piña Province**: Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 3♂, 55♀ (FSCA). **Independencia Province**: Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 11♂, 54♀ (NMNH). **La Vega Province**: Río Baiguante, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 20♂, 69♀ (NMNH); same, but 19–21 May 1995, 1♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 3♂, 6♀ (NMNH). Constanza, 2–6 June 1969, Flint & Gómez, 7♂, 4♀ (NMNH). El Convento, 12 km SE Constanza, 2–6 June 1969, Flint & Gómez, 1♂; same, but 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 3♂, 168♀ (NMNH). 11.5 km S. of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 2♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°0.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 1♂, 3♀ (NMNH). La Cienega de Manabao, Park Headquarters, 20–21 April 2000, Woodruff & Henry, 5♀ (FSCA). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 1♀ (FSCA). **Pedernales Province**: Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 1♀ (NMNH). 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 5♀ (FSCA). **Puerto Plata Province**: Los Hidalgos, 4–5 June 1969, Flint & Gómez, 1♂, 2♀ (NMNH). **San Juan Province**: at river, 1 km off rd. to Vallejuelo, El Capá, 21 May 1985, Woodruff et al., 4♀ (FSCA). Río Mijo, 22 May 1985, Woodruff et al., 1♀ (FSCA).

Hydroptila medinai Flint

Hydroptila medinai Flint, 1964:54 [♂, ♀]. Botosaneanu, 1991a:130 [Haiti].

The species was described originally from Puerto Rico and has since been recorded from Cuba and Haiti. These

records from the Provinces of El Seibo, La Altagracia, Pedernales, and Puerto Plata are the first from the Dominican Republic.

Material Examined.—**DOMINICAN REPUBLIC. El Seibo Province:** Río Quisibani, E. El Seibo, 18°45.3'N, 68°55.7'W, 12 May 1995, Flint, 11♂, 13♀ (NMNH). Pedro Sanchez, small stream, 10 June 1976, Woodruff, 3♂, 8♀ (FSCA). **La Altagracia Province:** La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 5♂, 1♀ (FSCA). **Pedernales Province:** N. Cabo Rojo, km. 21, 1200 ft (365 m), 19 June 1976, Woodruff, 1♀ (FSCA). **Puerto Plata Province:** Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 14♀ (NMNH).

Genus *Leucotrichia* Mosely

The genus *Leucotrichia* is exclusively New World in distribution, being known from southern Canada south to Brazil. All the Greater Antillean islands support at least one species with a species known from Dominican amber (Wells and Wichard, 1989). A female, doubtfully belonging to this genus, is recorded from Martinique but otherwise the genus is known only on Grenada and south. The immature stages have been described a number of times (Flint, 1964, 1970; Wiggins, 1996). They live under a silken cover with an opening at both ends from which they extend the head and thorax to graze on surrounding periphyton.

Leucotrichia gomezi Flint

Leucotrichia gomezi Flint, 1970:7 [♂, larva, case].

This species was described from examples taken in central La Vega Province. No new material has been found.

Leucotrichia tubifex Flint

Leucotrichia tubifex Flint, 1964:44 [♂, ♀, larva, pupa, case, Puerto Rico]. Flint, 1968a:44 [Jamaica, ♂, ♀, larva, pupa, case]; Flint, 1970:7 [Dominican Republic, ♂, larva, case]; Botosaneanu, 1991a:116 [Haiti]; Botosaneanu, 1995:22 [Dominican Republic]; Botosaneanu & Bolland, 1997:71 [♀, parasitic mite].

Originally described from Puerto Rico, the species has subsequently been recorded from Jamaica, Haiti, and the Dominican Republic. In the Dominican Republic, it has been recorded only from the Province of La Vega; we here add the Provinces of Azua, Dajabón, Elias Piña, and El Seibo.

Material Examined.—**DOMINICAN REPUBLIC. Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 1♂ (CMNH). **Dajabón Province:** 9 km S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 2♂, 1♀ (CMNH). **Elias Piña Province:** 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 1♂ (NMNH). **El Seibo Province:** Pedro Sanchez, small stream, 10 June 1976, Woodruff, 2♂, 1♀ (FSCA). **La Vega Province:** Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 3♂, 5♀ (NMNH); same, but 8–21 May 1995, Mathis, 2♀ (NMNH). Salto Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 1♂ (NMNH). La Cienega, nr. Manabao, 19°03.9'N, 70°51.8'W, 1050 m, 28 March 1999, Mathis, 1♂ (NMNH). 5 km W Manabao, Finca Eliado Fernandez "Paso

la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 3♂, 1♀ (FSCA).

Genus *Metrichia* Ross

This genus of exclusively New World distribution, is found from the southwestern United States, south through Mexico and Central America to Chile and including both the Greater and Lesser Antilles. The genus is quite speciose, with nearly 60 species described, many of which seem to be of very narrow distribution.

Larvae of several species have been described (Flint, 1964; Wiggins, 1996). They construct flattened, purse-shaped cases of silk and plant fragments, some species even add two "chimneys" to the dorsal margin (Botosaneanu and Flint, 1982).

Metrichia cafetalera Botosaneanu

Metrichia cafetalera Botosaneanu, 1980:110 [♂, Cuba]. Botosaneanu, 1995:26 [♂, ♀, Dominican Republic].

The species was originally described from the Province of Las Villas in Cuba and subsequently recorded from the Province of La Vega in the Dominican Republic. We have an additional collection from the Province of Peravia.

Material Examined.—**DOMINICAN REPUBLIC. Peravia Province:** 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, cloud forest on river, 5–6 August 1990, Rawlins & Thompson, 15♂ (CMNH, NMNH). [**La Vega Province:** Convento, 12 km S Constanza, 6–13 June 1969, Flint & Gómez, 20♂, 59♀ (NMNH, CMNH, FSCA).

Metrichia fontisuoreani (Botosaneanu)

Ochrotichia (*Metrichia*) *fontismoreani* Botosaneanu, 1991a:125 [♂, ♀, Haiti].

Metrichia fontismoreani (Botosaneanu): Botosaneanu, 1995:27 [♂ abdomen, ♀, Dominican Republic].

Another species described from Haiti, this one has been recorded from the provinces of La Vega, Duarte, and Independencia in the Dominican Republic. New material adds the provinces of Barahona and Monseñor Nouel to the distribution.

Material Examined.—**DOMINICAN REPUBLIC. Barahona Province:** San Rafael, 8.3 km S Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 22 March 1999, Flint, 13♂, 1♀ (NMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins & Thompson, 2♂ (CMNH). **Independencia Province:** La Descubierta, 0 m, 18°34.1'N, 71°43.8'W, 25 March 1999, Flint, 1♂ (NMNH). **La Vega Province:** Salto Baiguate, nr. Jarabacoa, 19°05.5'N, 70°36.9'W, 570 m, 9 May 1995, Mathis, 2♂, 1♀ (NMNH); same, but 16 May 1998, 1♂ (NMNH). Salto Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 9 May 1995, Flint, 5♂ (NMNH). La Cienega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 1♂ (FSCA). **Monseñor Nouel Province** [not La Vega as labelled]: 6 km [not mi as labelled] NW Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 2♂, 1♀ (FSCA). 6.3 km W Bonao [ct. Carretera Duarte and rt. 12], 19°01.6'N, 70°28.9'W, 670 m, 29 March 1999, Mathis, 1♂ (NMNH). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 2♂ (NMNH). **Peravia Province:** 10 km E San José de Ocoa, 18°35'N, 70°25.6'W, 21 May 1998, Mathis, 6♂, 2♀ (NMNH).

Metrichia kumanskii (Botosaneanu)
(Fig. 21)

Ochrotrichia (*Metrichia*) *kumanskii* (Botosaneanu), 1991a:128 [♂, ♀, Haiti].

Metrichia kumanskii (Botosaneanu): Flint, Holzenthal, & Harris, 1999:100 [to *Metrichia*].

The species was described from Haiti and is here recorded from the Provinces of La Vega and Monseñor Nouel in the Dominican Republic. The genitalia of the example from Monseñor Nouel appears to be exactly as figured for the type, but the inferior appendage of the example from La Vega differs slightly. The apical point which is strongly attenuate in the type is here much shortened; there appears to be no other genitalic or abdominal difference between the two specimens.

A subspecies, *M. kumanskii jamaicae* has been described from Jamaica. It was held to differ from the typical form primarily in possessing the comma-shaped pouches between segments 6 and 7. Our two examples from the Dominican Republic both possess these marks as well as the pair of small sacs between segments 4 and 5, thus calling into question the distinctness of the Jamaican form.

Material Examined.—DOMINICAN REPUBLIC. **La Vega Province**: La Ciénega de Manabao, Park Headquarters, 3000 ft. [ca. 915 m], 3–5 July 1999, R.E. Woodruff, 1♂ (FSCA). **Monseñor Nouel Province** [not La Vega as labelled]: 6 km [not mi as labelled] NW Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 1♂ (FSCA).

Metrichia longispina Flint and Sykora, **new species**
(Fig. 22)

This is a species very similar to *M. cafetalera* and the following species in the general structure and form of the male genitalia, differing almost exclusively in the structure of the phallus. From both of these species it may be distinguished by the very long spine arising at midlength and lying beside the other phallic process which bears only a single, large, strongly curved spine.

The female differs from that ascribed to *M. cafetalera* in that the posterior margin of the venter of segment 7 is evenly rounded and its apodemes, which are attached to a small posteromesal plate, diverge at less than 90°.

Adult Male.—Length of forewing 2.5 mm. Color fuscous; head and thorax with silvery-white hair, forewings with irregular, longitudinal silvery markings. Abdomen with pair of small pockets between segments 6 and 7, each with comma-shaped dark structure within. Seventh sternum with very small ventromesal point. Genitalia: Eighth sternum less than twice as long as high; posterior margin slightly sinuate. Cercus small, ovoid. Tenth tergum membranous; lateral hook elongate, tip curved strongly ventrad. Inferior appendage as long as high in lateral aspect, posterior margin obtusely angulate, dorsal margin convex. Phallus conical basally, constricted before midlength and divided into two apical process, one

long, slender slightly sinuous, darkened, other, curved to opposite side, consisting of flat sclerite, convolute toward apex and bearing at midlength large, curved spine arising from large, dark, basal sclerite.

Female.—Seventh sternum with posterior margin evenly rounded. Seventh tergum on each side with strap-like sclerite, obliquely truncate and bearing row of 5–8 setae. Apodemes of seventh sternum attached to small internal sclerite near center of posterior margin, angle of divergence between apodemes slightly less than 90°.

Type Material.—Holotype, male: DOMINICAN REPUBLIC. [La Vega Province]: Convento, 12 km S. Constanza, 6–13 June 1969, Flint & Gómez (NMNH). Paratypes: 11.5 km S. of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 1♂, 1♀ (NMNH). Nr. Aguas Blancas, 13.7 km SE Constanza, 18°51.6'N, 70°41.9'W, 1505 m, 7 May 1995, Flint, 1♀ (NMNH). La Ciénega de Manabao, National Park Headquarters, 3000 ft (ca. 900 m), 20–21 April 2000, Woodruff & Henry, blacklight trap, 1♀ (FSCA).

Metrichia squamigera Flint

Ochrotrichia (*Metrichia*) *squamigera* Flint, 1992:385 [♂, Puerto Rico]. *Metrichia squamigera* (Flint): Flint, Holzenthal, & Harris, 1999:101 [to *Metrichia*].

The species was described from a few examples taken over a small stream in the Luquillo Mountains of eastern Puerto Rico. The male from the Dominican Republic has been compared with the holotype and found to be identical. A female from each country also has been compared and found identical, providing additional confirmation of the specific identity and the correct association of sexes.

Material Examined.—DOMINICAN REPUBLIC. **Independencia Province**: La Descubierta, 0 m, 18°34.1'N, 71°43.8'W, 25 March 1999, Flint, 1♂, 1♀ (NMNH).

Metrichia sp.

These females from Haiti have been compared with the allotype of *M. kumanskii*. They are very nearly alike, but there are enough small differences that we are unwilling to consider this a firm identification.

Material Examined.—HAITI. **Département de L'Oueste**: Parc National La Visite, Pic La Visite, 2100 m, 11 May 1984, blacklight, Thomas, 2♀ (FSCA).

Genus *Neotrichia* Morton

This genus, as well as the entire tribe Neotrichiini, is limited to the New World, primarily the Neotropical realm. Although a number of species are known from the United States and Canada, the greatest number, around 85, are found in Central and South America and the West Indies.

Larvae were first described by Ross (1944) and subsequently by various authors (Botosaneanu, 1994b; Flint, 1964; Wiggins, 1996). The larvae construct small,

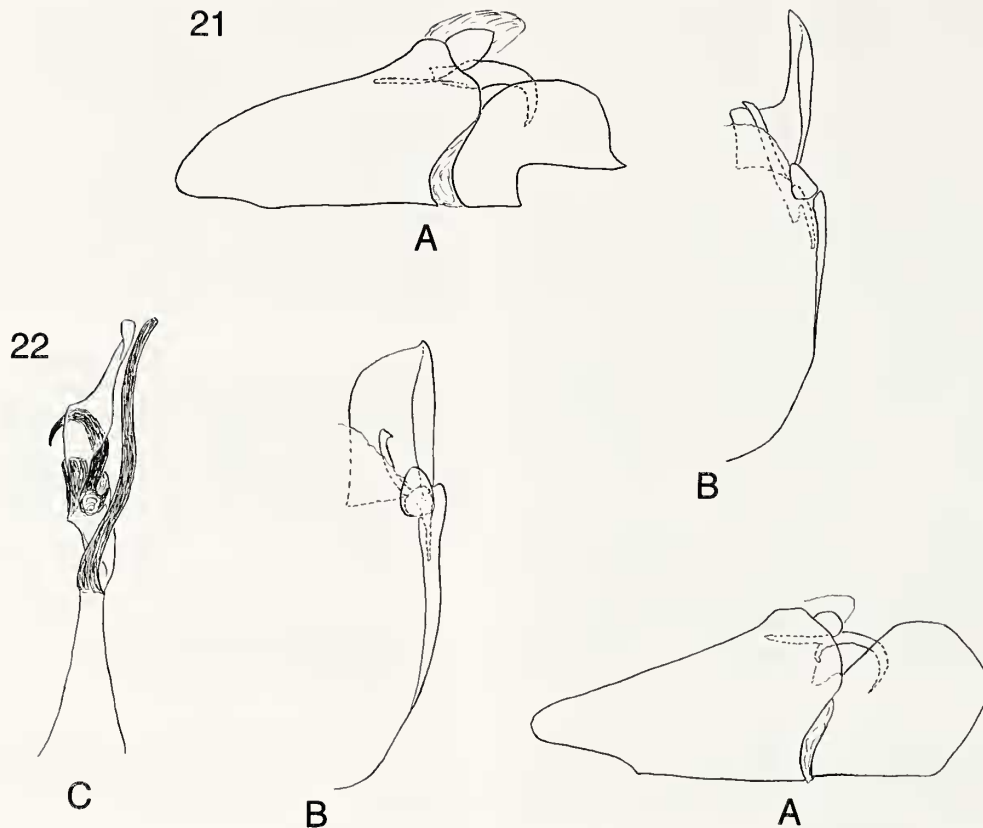


Fig. 21.—*Metrichia kumanski* (Botosaneanu), male genitalia: A, Lateral. B, Ninth and tenth terga and inferior appendage, dorsal.

Fig. 22.—*Metrichia longispina* new species, male genitalia: A, Lateral. B, Ninth and tenth terga and inferior appendage, dorsal. C, Phallus, dorsal.

tapered cases of small sand grains and are found in streams and rivers on and under rocks and boulders. Adults are commonly taken in large numbers at light near the larval habitat.

Neotrichia iridescens Flint

Neotrichia iridescens Flint, 1964:51 [♂, ♀, larva, case]. Flint, 1968a:37 [Jamaica, ♂, ♀, larva, case]; Flint, 1968b:48 [Dominica, St. Lucia, ♂, ♀, larva, case]; Botosaneanu, 1979:51 [Cuba]; Botosaneanu, 1989:99 [Martinique]; Botosaneanu, 1991a:128 [Haiti]; Botosaneanu, 1994a:43 [Guadeloupe]; Botosaneanu, 1995:32 [Dominican Republic]; Botosaneanu and Hyslop, 1998:18 [Jamaica].

This species is widely distributed over the Greater and Lesser Antilles: Cuba, Jamaica, Hispaniola, Puerto Rico, Guadeloupe, Dominica, St. Lucia, and Martinique. It has not yet been taken on any of the more southern Lesser Antillean Islands: St. Vincent, Grenada, Tobago, or Trinidad. It has been recorded from the provinces of Independencia and Pedernales in the Dominican Republic, and here from the additional provinces of Azua, El Seibo, La Altagracia, Monseñor Nouel, and Puerto Plata.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 1♂, 1♀ (CMNH). **El Seibo Province:**

Río Quisibani, E El Seibo, 18°45.3'N, 68°55.7'W, 12 May 1995, Flint, 3♀ (NMNH). Pedro Sanchez, small stream, 10 June 1976, Woodruff, 29♂, 59♀ (FSCA). **Independencia Province:** Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 1♂ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 1♂, 3♀ (NMNH). **La Altagracia Province:** La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 28♂, 31♀ (FSCA, NMNH, CMNH). **Monseñor Nouel Province:** Hotel Jacaranda, Bonaó, 27–28 June 1998, Woodruff & Baranowski, 1♂, 1♀ (FSCA); same, but 18 April 2000, Woodruff & Henry, 1♂, 2♀ (FSCA). **Pedernales Province:** N Cabo Rojo, km 24, 3000 ft (915 m), 2 July 1998, Woodruff & Baranowski, 1♀ (FSCA). **Puerto Plata Province:** Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 2♂, 8♀ (NMNH).

Neotrichia bifurcata Harris, new species (Fig. 23)

The genitalic appearance of *N. bifurcata* resembles that of *N. gotera* Flint from Argentina. Both species have the ventral process from the subgenital plate, a feature also seen in *N. bullata* Flint, both have spine-like processes from segment X, although this character is much more developed in the new species, and both have phallic apices forked. The new species is easily recognized by the elongate, bifid inferior appendages, and the structure of both the subgenital plate and segment X.

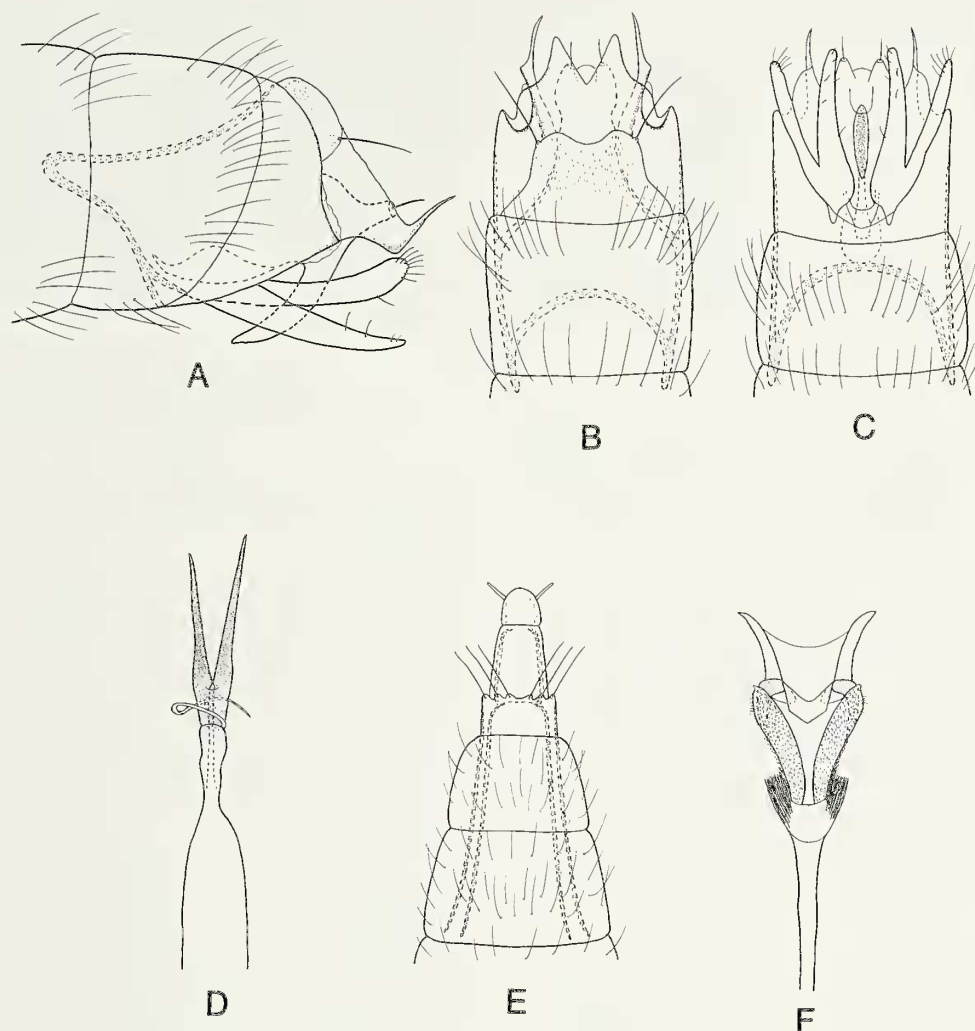


Fig. 23.—*Neotrichia bifurcata* Harris, new species, male genitalia: A, Lateral. B, Dorsal. C, Ventral. D, Phallus, dorsal. Female genitalia: E, Ventral. F, Vaginal sclerites, ventral.

Adult Male.—Length of forewing, 1.7 mm. Color brown in alcohol. Antenna with 18 segments. Abdominal segments VII and VIII annular. Genitalia: Segment IX with anterolateral margin bearing short, narrow lobe extending into segment VII; in dorsal view narrow, deeply emarginate anteriorly, posteriorly with lateral margins divided into thin apodemes. Tergum X complex, in lateral view with dorsum lobate bearing elongate seta from posterior margin, venter tapering downward to elongate, upturned acuminate process; in dorsal view lobate anteriorly, posteriorly deeply incised, lateral acuminate process protruding apically. Inferior appendage bifid in lateral view, upper portion thin and rounded apically, lower portion thin and gradually tapering distally; in ventral view split to near base, outer portion thin and rounded anteriorly, inner portion thin slightly tapering apically and slightly curved along mesal margin. Subgenital plate in lateral aspect with elongate ventral

process curving and tapering distally, posterior process narrowing apically and bearing stout seta; in ventral view divided into pair of seta-bearing lobes apically, ventral process appearing as oblong, sclerous plate. Phallus forked distally and heavily sclerotized, ejaculatory duct thin and short, emerging at base of fork, spiral process encircling shaft at midlength.

Female.—Length of forewing, 1.8 mm. Color brown in alcohol. Antenna with 18 segments. Abdominal segments VI and VII annular. Genitalia: Abdominal segment VIII with ring of setiferous lobes on posterior margin; internally with lateral apodemes arising from lateral margins and extending through segment VI. Segment IX rectangular with internal, lateral sclerites giving rise to anterolateral apodemes extending through segment VI. Segment X short, rounded apically, bearing pair of lateral papillae. Vaginal sclerites complex, consisting of several sclerotized plates, antermost plate small, fringed with

profuse hairs, and giving rise to pair of narrow, lateral plates extending posteriad and gently curving outward, lateral margins covered with short hairs, ventral surface with short protuberances, posteromesally with chevron-shaped plate, posterolaterally with pair of thin, club-shaped plates curving inward and giving rise to roughly rectangular structure with sclerous lateral margins.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC**, **Pedernales Province**: Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, J. Rawlins, C. Young, S. Thompson, J. Davidson (CMNH). Paratypes: Same data, 2♂, 1♀ (CMNH, NMNH).

Neotrichia pequenita Botosaneanu

Neotrichia pequenita Botosaneanu, 1977:277 [Cuba, ♂]. Botosaneanu, 1990:46 [Barbados, ♂, ♀]; Botosaneanu, 1991a:128 [Haiti]; Botosaneanu, 1994b:458 [Cuba, larva]; Botosaneanu and Alkins-Koo, 1993:18 [Trinidad]; Botosaneanu and Hyslop, 1998:18 [Jamaica].

Neotrichia species 1 Kumanski, 1987:23 [♀]. *New synonym*.

The recorded distribution of this species is scattered over the Greater and Lesser Antilles: Cuba, Jamaica, Haiti, Barbados, and Trinidad. Although known from several localities in Haiti, it had not been recorded from the Dominican Republic before. We have a few examples from the provinces of Independencia, La Altagracia, Monseñor Nouel, and Monte Cristi.

Comparison of the figures of females in Botosaneanu (1990, Fig. 26), Kumanski (1987, Fig. 15a) and our material leave little doubt but that all refer to the same species, association based on the Barbadian collections of Botosaneanu.

Material Examined.—**DOMINICAN REPUBLIC**, **Independencia Province**: Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 1♀ (NMNH). **La Altagracia Province**: La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 1♂ (FSCA). **Monseñor Nouel Province**: Río Yuna, Bonao, 600 ft [ca. 180 m], 18 April 2000, Woodruff & Henry, 1♂ (NMNH). **Monte Cristi Province**: Monte Cristi, 4 June 1986, Miller & Stange, 1♀ (FSCA).

Neotrichia species

Neotrichia sp. Botosaneanu, 1991a:130.

Botosaneanu records a single female in poor state from the southern arm of Haiti. It is stated not to be either *N. iridescens* or *N. pequenita*. However, with the discovery of *N. bifurcata* in southwestern Dominican Republic it is quite possible that Botosaneanu's specimen is the female of *N. bifurcata*. It is, therefore, not counted as an additional insular species.

Genus *Ochrotrichia* Mosely

This genus, together with the two preceding genera, is exclusively New World in distribution. It is well represented throughout, with nearly 90 species, and four fossil species, described to date (Wichard, 1981; Wells and Wichard, 1989). All the Greater Antillean islands hold at least four species, with Hispaniola bearing a minimum of eight.

Ross (1944) first described the larvae of this genus, and other species have been described since (Wiggins, 1996). The larvae make cases of silk, sand, and/or algal pieces, often with a pair of short, tubular, dorsal projections (Botosaneanu and Flint, 1982). Most are compressed, purse-like in form, but some are depressed with the ventral valve flat against the substrate. Most inhabit flowing waters of many types, but some, especially those with flattened cases, are inhabitants of the madicolous habitat. Some feed by scraping diatoms from the substrate.

Ochrotrichia baorucoensis Flint and Sykora, *new species* (Fig. 24)

This and the Jamaican *O. caligula* Flint are clearly sister species, based on the overall structure of the male genitalia. *Ochrotrichia baorucoensis* is to be distinguished by the apex of the tenth tergum which is pointed on both sides, the inferior appendage bears a small lobe with several black setae ventromesally, and the darkened apical process of the phallus is scythe-shaped rather than curled around the pale process.

The Larimar mine locality produced males and females of three species, the sexes of only *O. larimar* n. sp. seem to be clearly associated. The males and females of this and *O. verda*, also taken in the same collection, cannot be unequivocally associated.

Adult Male.—Length of forewing, 3 mm. Color gray, mostly denuded; antennae, legs and venter stramineous; head, thorax dorsally, and forewing gray, latter with indication of pale transverse line at midlength. Seventh sternum with elongate, anteromesal process. Genitalia: Ninth segment tubular, tergum neither depressed nor produced anteriorly, with large, rounded lobe from posterodorsal margin. Tenth tergum elongate, heavily sclerotized laterally, apex with mesal, U-shaped excision, apicolaterally produced into sharp point. Inferior appendage rather boot-shaped in lateral aspect, ventral margin with small, mesal lobe; apex with band of short, dark, peglike setae, mesal lobe with 3–4 such setae. Phallus barely longer than genital capsule, divided at nearly midlength into two apical processes, one darkened, scythe-shaped, other pale, tubular.

Female.—Not certainly associated.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC**, **Barahona Province**: San Rafael, 8.3 km S of Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 15 May 1995, O.S. Flint, Jr. (NMNH). Paratypes: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley, 2♂ (FSCA, NMNH).

Ochrotrichia cachonera Botosaneanu

Ochrotrichia cachonera Botosaneanu, 1995:23 [♂, ♀].

The holotype was described from Independencia Province, and we here record males from three more localities in the provinces of Barahona, La Vega, and

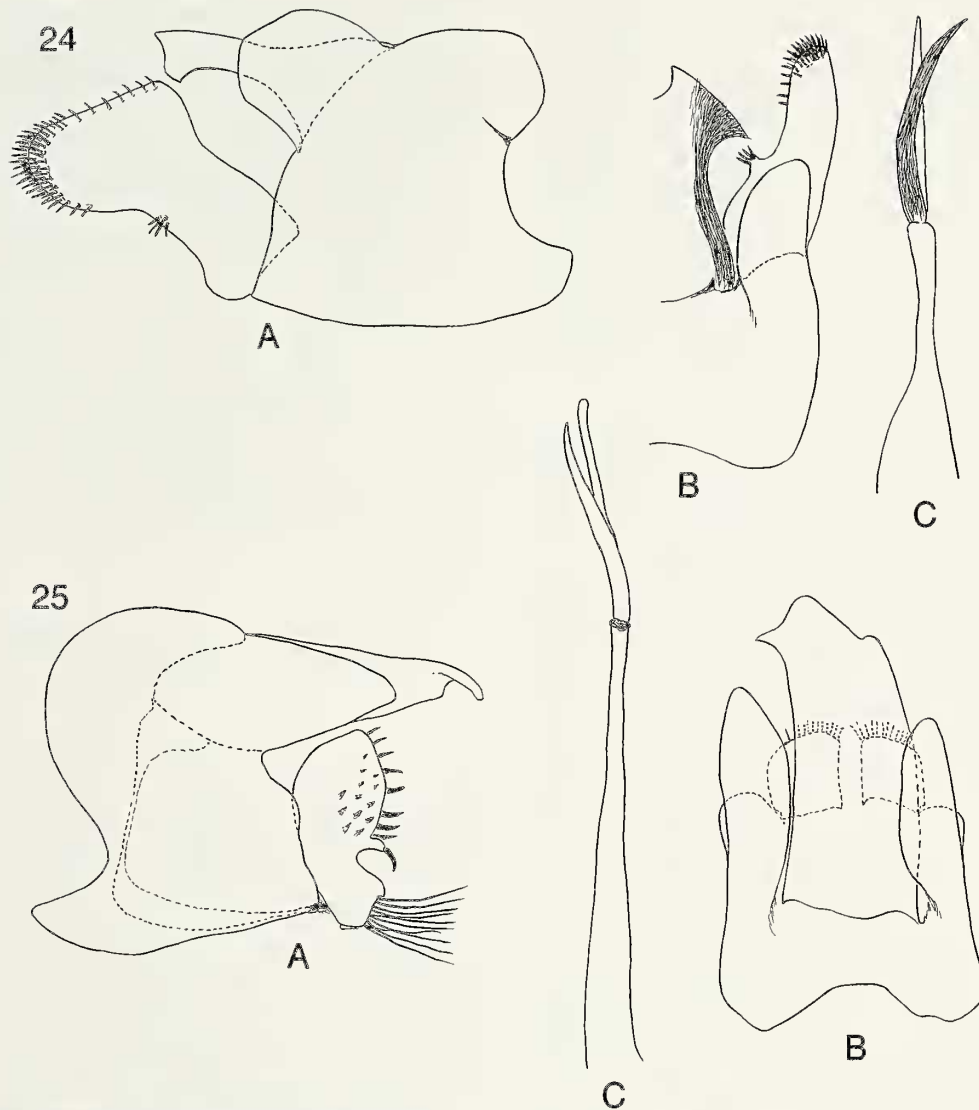


Fig. 24.—*Ochrotrichia baorucoensis* new species, male genitalia: A, Lateral. B, Dorsal. C, Phallus, dorsal.

Fig. 25.—*Ochrotrichia larimar* new species, male genitalia: A, Lateral. B, Dorsal. C, Phallus, dorsal.

Monseñor Nouel. The female allotype was from the Province of Monte Plata. The two females here recorded from Barahona and Hato Mayor Provinces, have been compared directly to the allotype and found identical. However, none of these females have been taken with associated males and thus there still is no proof that they are correctly associated.

Material Examined.—**DOMINICAN REPUBLIC.** **Barahona Province:** San Rafael, 8.3 km S of Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 15 May 1995, Flint, 8♂ (NMNH, CMNH). **Larimar Mine, nr. Filipinas,** 26 June–7 July 1992, Woodruff & Skelley, 1♀ (FSCA). **Hato Mayor Province:** Mango Limpio, 23 km N Hato Mayor, 9 June 1986, Woodruff & Stange, 1♀ (FSCA). **La Vega Province:** Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 1♂ (NMNH). **Monseñor Nouel Province** [not La Vega as labelled]: 6

km [not mi as labelled] NW Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 1♂ (FSCA). [**Monte Plata Province:** Arroyo Los Verros, Sierra de Agua, 29 April 1995, Botosaneanu, 1♀ allotype (ZMUA).

Ochrotrichia ingloria Botosaneanu

Ochrotrichia ingloria Botosaneanu, 1995:25 [♂, ♀].

The types of this species were taken in the same localities as the previous species in the provinces of Independencia and Monte Plata. We have one more series from Pedernales Province.

Material Examined.—**DOMINICAN REPUBLIC.** **Pedernales Province:** Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 8♂ (CMNH, NMNH).

Ochrotrichia larimar Flint and Sykora, **new species**
(Fig. 25)

This species is a very close relative to *O. spinosissima* Flint which is known from Puerto Rico and Dominica. From the typical *O. spinosissima* specimens, *O. larimar* differs by the tenth tergum extending proportionately further beyond the dorsolateral lobes of the ninth segment and its tip being more strongly asymmetrical and bearing a point to its right side, the inferior appendage is proportionately much higher than long, and the apical appendages of the phallus are only half the length of the basal portion (the apical section is only as long as the basal section in *O. spinosissima*).

The females of this species seem to be firmly associated, based on a large collection containing both sexes and the similarity of their terminalia to those of the closely related *O. spinosissima* from Puerto Rico and Dominica. It is now apparent that the female described by Flint (1964) as that of *O. marica* (Fig. 16 N) is that of *O. spinosissima* (c.f. Flint, 1968b, Fig. 162). The Hispaniolan females have a similar elongate plate apicoventrally from the eighth sternum but it is proportionately more slender and only barely expanded apicad.

Adult Male.—Length of forewing, 2.5 mm. Color brown in alcohol; probably identical to that of female. Seventh sternum with elongate, mesal process. Genitalia: Ninth segment tubular, tergum neither depressed nor produced anteriorly, with large, rounded lobe from posterodorsal margin. Tenth tergum elongate, slightly curved plate, apex asymmetrical with lateral point to right side. Inferior appendage higher than long in lateral aspect, posteroventral lobe bearing brush of long setae, posterodorsal margin with row of stout black setae, ventralmost seta borne from elongate base, mesal face with several more black, pointed setae. Phallus divided at apical third into two apical processes one darkened, slightly curved and acute apically, other pale, tubular.

Female.—Length of forewing, 2.5–3 mm. Color fuscous; antennae, legs basally and venter stramineous; head and thorax laterally with white hair; tarsi of mid- and hindlegs annulate; forewing fuscous with white transverse line at midlength and small white spots along margin. Genitalia: Eighth sternum with elongate apicomeral lobe, slightly more than twice as long as wide, slightly broadened apically. Spermathecal sclerite as in Flint, 1968b, Fig. 163.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Barahona Province:** Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley (FSCA). Paratypes: Same data, 4♂, 7♀ (FSCA, NMNH, CMNH). [**La Vega Province:**] 20 km S Constanza, 3–7 June 1969, Flint & Gómez, 1♀ (NMNH). [**La Vega Province:**] La Palma, 12 km E El Río, 2–12 June 1969, Flint & Gómez, 1♀ (NMNH).

Ochrotrichia obovata Flint and Sykora, **new species**
(Fig. 26)

Based on the structure of the phallus, and the ninth and tenth segments, this species apparently is related to

O. caramba Botosaneanu (Cuba), *O. cachonera* Botosaneanu (Dominican Republic), *O. spinosissima* Flint (Puerto Rico, Dominica), and *O. villarenia* Botosaneanu (Cuba). From all these it is immediately distinguished by having an elongate, apically-rounded, inferior appendage with many, short, peglike setae along its ventral margin.

Adult Male.—Length of forewing, 3.5 mm. Color in alcohol: uniformly pale brown. Seventh sternum with distinct, short, apicomeral point. Genitalia: Ninth segment tubular, tergum neither depressed nor produced anteriorly, with large, rounded lobe from posterodorsal margin. Tenth tergum elongate, parallel-sided lobe shallowly divided apicomerally. Inferior appendage almost four times as long as broad, apex rounded, dorsal and ventral margins subparallel; with band of black, peglike setae around apex and along ventral margin. Phallus almost twice as long as genital capsule, divided at nearly midlength into two apical processes one darkened, other pale.

Female.—Unassociated.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. [La Vega Province:]** 20 km S Constanza, 3–7 June 1969, Flint & Gómez (NMNH).

Ochrotrichia seiba Flint and Sykora, **new species**
(Fig. 27)

This species is very closely related to the Jamaican *O. insularis* Mosely and the Cuban *O. ayaya* Botosaneanu, and is the unquestioned representative of this group found on Hispaniola. This species agrees most closely with *O. ayaya* in the shape of the tenth tergum, although both lobes are more nearly equal in size and the apices are not upturned, but agrees more with *O. insularis* in the shape of the inferior appendage which lacks a ventromesal extension. The apical point of the ventromesal spine with U-shaped base is much longer and directed posteriorly in *O. seiba*, rather than being barely longer than broad and angled laterad as it is in both the other species. The basodorsal spine arises from its lobe at a shallow, acute angle rather than being strongly arched basally.

All the available males have been checked to determine if they, too, have the basodorsal spine of the tenth tergum borne in two, mirror-image versions as has been shown for *O. insularis* (Botosaneanu and Hyslop, 1998). All the 16 males are identical, and of the “sinistral” morph, as shown. This is another difference from *O. insularis* in which 24 examples were found to be “dextral” and 13 “sinistral.”

The females of this species and *O. cachonera* are very similar and have been compared side-by-side. There are enough differences, mostly small, so that we believe them to represent two truly distinct species. The greatest difference is in the internal apodemes which only reach slightly beyond the anterior border of the seventh sternum in *O. cachonera*, but into the fifth segment in *O. seiba*.

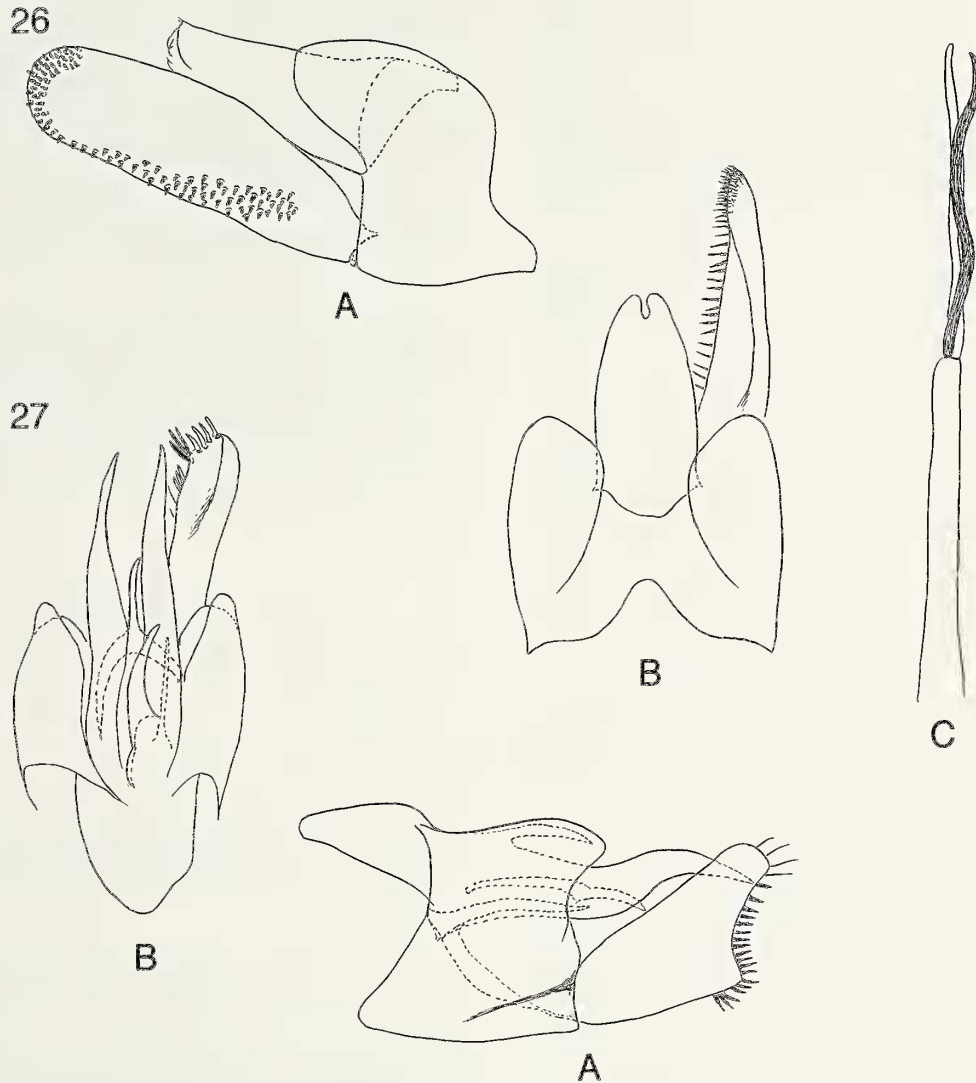


Fig. 26.—*Ochrotrichia obovata* new species, male genitalia: A, Lateral. B, Dorsal. C, Phallus, dorsal.

Fig. 27.—*Ochrotrichia seiba* new species, male genitalia: A, Lateral. B, Dorsal.

Adult Male.—Length of forewing, 2.5–3 mm. Color in alcohol: uniformly pale brown. Seventh sternum with minute, apicomesal point. Genitalia: Ninth segment tubular, tergum depressed and produced anteriorly, with large, rounded lobe from posterodorsal margin. Tenth tergum consisting of two elongate lobes, tapering to apical points roughly equal in shape; base of left process with basodorsal spine arising from lobe at acute angle; slender spine ventrally on left side and ventral U-shaped sclerite bearing elongate, slender spine apicomesally. Inferior appendage barely longer than high in lateral aspect with distinct posteroventral angle; posterior margin with row of short, black spines and small cluster of such spines barely separated from this row on ventral margin. Phallus long, slender, without noticeable modifications.

Female.—Size and color as in male. Genitalia: Eighth sternum with small, posteroventral, rounded lobe; apodemes attached laterally near posterior margin, extending anteriorly into fifth segment. Spermathecal sclerite with long anterior lobe and posterior arms (c.f. Flint, 1968a, fig. 125).

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, El Seibo Province**: Pedro Sanchez, small stream, 10 June 1976, R.E. Woodruff (FSCA). Paratypes: Same data, 14♂, 34♀ (FSCA, NMNH, CMNH). **Elias Peña Province**: Rio Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 1♂ (FSCA).

Ochrotrichia serra Botosaneanu

Ochrotrichia (*O.*) *serra* Botosaneanu, 1991a:125 [Haiti, ♂].

The species was described from one locality in Haiti. We have no new material.

Ochrotrichia verda Flint

Ochrotrichia (*O.*) *verda* Flint, 1968c:153 [Puerto Rico, ♂].

The unique holotype of this species is from the mountains of eastern Puerto Rico. It has been compared side-by-side with the specimen from the Larimar Mine in southwestern Dominican Republic and been found to be identical.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province**: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley, 1♂ (FSCA).

Ochrotrichia species A

The Larimar mine locality produced males of three species and females of four species, the sexes of only *O. larimar* seem to be clearly associated. A second female species agrees with females tentatively associated with *O. cachonera*. The males of *O. baorucoensis* and *O. verda* cannot be unequivocally associated with either of the remaining two female forms, although it is tentatively suggested that species A might be the female of *O. baorucoensis*.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province**: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley, 3♀ (FSCA).

Ochrotrichia species B

These females might be associated with *O. verda*, *O. baorucoensis* (males of both being taken at the same site), or some other species otherwise unknown at the site.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province**: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley, 2♀ (FSCA).

Genus *Orthotrichia* Eaton

A genus of around 75 species with a wide distribution throughout the world, it seems most speciose and diverse in southeast Asia, Australia, and Africa. There are six species described from North America, two of which have ranges extending into Central America and/or the Greater Antilles. One new species has recently been described from the Amazon basin in Peru.

The larvae are well known, constructing silken cases (Nielsen, 1948; Wells, 1985; Wiggins, 1996). They are usually associated with aquatic vegetation and filamentous algae in standing waters, but Wells (1985) recorded them from rocks in flowing waters with no obvious filamentous algae.

Orthotrichia aegerfasciella (Chambers)

Clymene aegerfasciella Chambers, 1873:114.
Orthotrichia americana Banks, 1904:116. Ross, 1944:140 [♂, ♀, distribution]; Flint, 1966:135 [to synonymy]; Botosaneanu, 1979:49 [Cuba].

Orthotrichia aegerfasciella (Chambers): Botosaneanu, 1991a:132 [Haiti].

The species has a wide distribution in eastern North America, being known from Canada south to Florida and west to Texas. It has been recorded from Cuba and Haiti in the Antilles, and Panama on the mainland. We here record it for the first time from the Dominican Republic, with records from the provinces of Barahona, La Altagracia, and La Romana.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province**: 24 km E Barahona, 27 September 1985, Woodruff & Stange, 1♀ (FSCA). 5 km NW Barahona, Agricultural Experiment Station, 29–30 April 1978, Woodruff et al., 2♀ (FSCA). **La Altagracia Province**: La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, blacklight, 41♂, 13♀ (FSCA, NMNH, CMNH); same, but sweeping, 1♂ (FSCA). Higueral, 19 March 1985, Woodruff & Drummond, 6♂, 1♀ (FSCA). **La Romana Province**: La Romana, 16 September 1976, Folch, 1♀ (FSCA).

Orthotrichia cristata Morton

Orthotrichia cristata Morton, 1905:75. Ross, 1944:141 [♂, ♀, distribution]; Flint, 1968a:45 [♂, ♀, Jamaica]; Botosaneanu, 1979:49 [Cuba].

This species has a distribution rather like that of the preceding species: Canada south to Florida, west to British Colombia and Texas, plus Cuba and Jamaica in the Greater Antilles. These are the first records for Hispaniola. It was taken in the provinces of Barahona, La Altagracia, and La Romana, at both ends of the Dominican Republic.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province**: 5 km NW Barahona, Agricultural Experiment Station, 29–30 April 1978, Woodruff et al., 2♀ (FSCA). **La Altagracia Province**: Higueral, 19 March 1985, Woodruff & Drummond, 5♂, 19♀ (FSCA, NMNH, CMNH). **La Romana Province**: La Romana, 16 September 1976, Folch, 5♂, 13♀ (FSCA, NMNH).

Genus *Oxyethira* Eaton

Oxyethira is a very large genus of Hydroptilini, with several hundred species known world-wide, over 75 species having been described from the Neotropics alone. They are found in all parts of the New World from Chile to the Arctic including both the Greater and Lesser Antilles. Kelley (1984) reviewed the genus and placed its species in several subgenera.

Larvae are well known and build distinctive flask-shaped cases of silk (Nielsen, 1948; Wiggins, 1996). Larvae are said to inhabit slow-moving or standing waters in vegetation or filamentous green algae, but are also frequently found on rocks in flowing waters (Wells, 1985). They are recorded as feeding on filamentous algae by puncturing the cells and feeding on the contents, but diatoms and entire algal filaments also have been found in the gut (Wiggins, 1996).

Oxyethira (Mesotrichia) albaeaguae Botosaneanu

Oxyethira (Dampftrichia) [sic] albaeaguae Botosaneanu, 1995:30 [♂, ♀, Dominican Republic].

This recently described species has only been taken in the province of La Vega in the Cordillera Central at 1000 m. and above. The material here recorded is all from the same area.

We are transferring the species to the subgenus *Mesotrichia*: see comments under *O. geminata* new species.

Material Examined.—DOMINICAN REPUBLIC. **La Vega Province:** El Convento, 12 km SE Constanza, 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 21♀ (NMNH). 11.5 km S of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 4♀ (NMNH). Near Alto Bandera Pass, Res. Sta. Fund. Moscoso Puello, 2400 m, 8–9 May 2001, Woodruff & class, 18♂, 9♀ (FSCA, NMNH). Cordillera Central, Convento, waterfall "Agua Blanca," 11 May 1995, L. Botosaneanu, light, 1♂, 2♀ topotypic paratypes (ZMUA).

Oxyethira (Dampftrichia) mirebalina Botosaneanu

Oxyethira (Dampftrichia) mirebalina Botosaneanu, 1991a:130 [♂, ♀, Haiti]. Botosaneanu, 1995:29 [Dominican Republic].

Originally described from Haiti, it has since been recorded from the provinces of Duarte, La Vega, and Monte Plata. Our record is also from the province of La Vega.

Material Examined.—DOMINICAN REPUBLIC. **La Vega Province:** Río Baiguat, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 19–21 May 1995, Flint, 12♂, 1♀ (NMNH).

HAITI. [Département de l'Ouest]: Grande rivière de l'Artibonite à Mirebalais, 27 Nov 1979, Botosaneanu, light, 1♂ holotype (ZMUA).

Oxyethira (Mesotrichia) geminata
Flint and Sykora, new species
(Fig. 28)

The species appears to belong to the subgenus *Mesotrichia*, agreeing with the basic characteristics outlined by Kelley (1984) for this subgenus. In addition to *O. geminata* and *O. scopulina* n. sp., it seems apparent that *O. longispinosa* Kumanski (Cuba), *O. ortizorum* Botosaneanu (Dominican Republic), and *O. albaeaguae* Botosaneanu (Dominican Republic) all should be placed in *Mesotrichia* together with the type species *O. jamaicensis* Flint (Jamaica). The subgenus thus contains six species, all from the Greater Antillean islands. *Oxyethira geminata* is most similar to *O. jamaicensis* and *O. albaeaguae* as all three species lack an elongate posterolateral lobe from the eighth segment. From these it is distinguished by the form of the subgenital processes which has, in ventral aspect a single mesal point; in *O. jamaicensis* there are two points, and in *O. albaeaguae* it is bandlike with no points. The phallus in *O. geminata* ends in two separate processes, each tipped with a dark spine, in *O. albaeaguae* there is only one spine. *Oxyethira jamaicensis* has two, dark, apical spines, but they arise from a single lobe. The females of *O. geminata* and *O. jamaicensis* both have a bilobed

eighth sternum, but *O. jamaicensis* has well-developed, cuplike, basolateral pockets which are lacking on *O. geminata*. The apex of the eighth sternum in *O. albaeaguae* is developed into a single, mesal projection.

Adult Male.—Length of forewing, 2.5–3 mm. Color pale brown, forewing with two black spots, one in center, other on posterior margin before midlength, fringe mostly fuscous. Seventh sternum with large, apicomeral, pointed process. Genitalia: Eighth segment deeply divided ventromesally, posterolateral margin rounded. Ninth segment greatly produced anteroventrally into sixth segment; dorsal margin near posterior bearing elongate, pointed process (varying in width and curvature between specimens). Tenth tergum membranous. Subgenital plate band-like, decurved apically, bearing darkened, mesal point in ventral aspect. Bilobed process with apicolateral angles slightly developed in ventral aspect, bearing terminal seta. Inferior appendage short, blackened point in lateral aspect; black, partially fused mesally and produced posterolaterally in ventral aspect (varying in degree of fusion and length between specimens). Phallus long, slender, tubular basally, narrowing apically into slender, strap-like sclerite; apically with pair of elongate, arched spines (varying in length and degree of twisting between specimens) one arising from end of strap-like sclerite, other with more membranous attachment; ejaculatory duct internally, continuing through strap-like sclerite.

Female.—Size and color as in male. Genitalia: Sixth sternum with distinct apicomeral point. Eighth sternum produced into darkened, rectangular, posterior projection, partially divided mesally in ventral view; produced anterolaterally into large, darkened lobes, truncate anteriorly and widely separated mesally in ventral view. Eighth tergum appearing to lack anterolateral apodemes, produced dorsad in lateral view. Spermathecal sclerite almost wholly membranous, elongate and complex with anterior ring-like sclerite.

Type Material.—Holotype, male: DOMINICAN REPUBLIC. **La Vega Province:** 11.5 km S of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, W.N. Mathis (NMNH). Paratypes: Same, but Flint, 1♂, 3♀ (NMNH). **Peravia Province:** 3 km SW La Nuez, upper Río Las Cuevas, 18°40'N, 70°36'W, 1850 m, 5–6 August 1990, Rawlins & Thompson, 3♂, 7♀ alcohol (CMNH).

HAITI. Département de l'Ouest: Parc National La Visite, Pic La Visite, 2100 m, 11 May 1984, blacklight, Thomas, 1♂, 12♀ (FSCA); same, but basecamp, 1980 m, 19 May 1984, 3♀ (FSCA).

Oxyethira (Mesotrichia) ortizorum Botosaneanu

Oxyethira (Dampftrichia) [sic] ortizorum Botosaneanu, 1995:29 [♂, Dominican Republic].

The males of this uncommon species are rarely collected, although the females are not infrequently taken at high elevations. The holotype has been compared directly to a cleared male from "the Larimar Mine" and found to agree very closely. The only difference noted is in the darkened, oval plate on sternum nine: in the

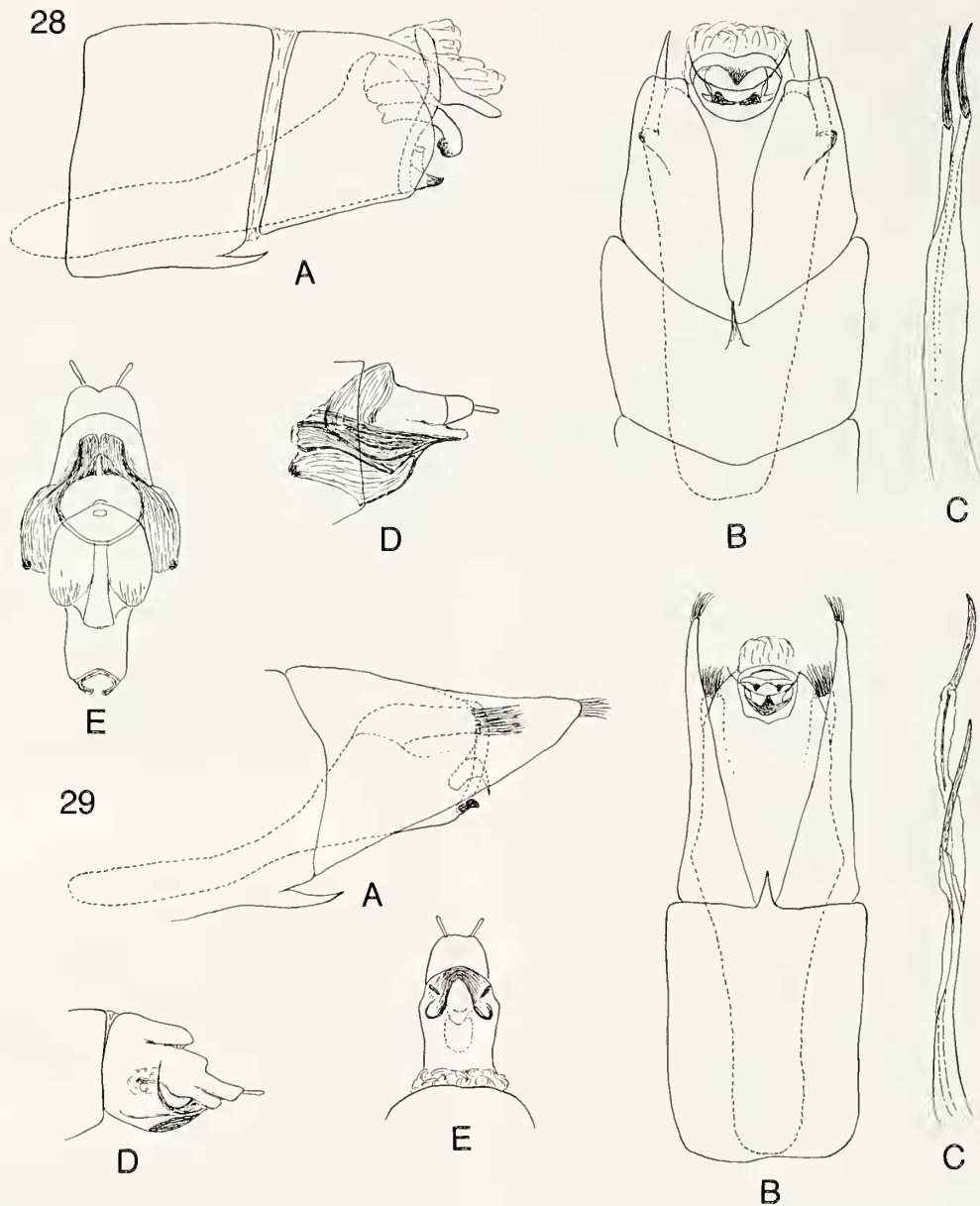


Fig. 28.—*Oxyethira geminata* new species, male genitalia: A, Lateral. B, Ventral. C, Phallus, dorsal. Female genitalia: D, Lateral. E, Ventral.

Fig. 29.—*Oxyethira scopulina* new species, male genitalia: A, Lateral. B, Ventral. C, Phallus, dorsal. Female genitalia: D, Lateral. E, Ventral.

holotype, this is distinctly longer than wide, but in the "Larimar" material it is barely as long as wide. The two females associated with these three males are the basis for the assignment of a number of collections from the central mountains to this species. See the comments under *O. geminata* concerning the transfer of this species to the subgenus *Mesotrichia*.

In the addition to the collections from the Cordillera Central, La Vega Province at over 1000 m. elevation, it is here recorded from Barahona and Elias Piña Provinces at higher elevation sites.

Material Examined.—DOMINICAN REPUBLIC. Barahona Province: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, Woodruff & Skelley, 3♂, 2♀ alcohol (FSCA, NMNH). Elias Piña Province: Río Limpio, 2400 ft. [ca. 730 m], 26–27 Apr 2000, Woodruff & Henry, blacklight trap, 3♀ (FSCA). [La Vega Province]: Cordillera Central, Jarabacoa, Los Dajaos, Arroyo El Dulce, 26 Apr 1995, Botosaneanu, light, 1♂ holotype (ZMUA). La Ciénega de Manabao, National Park Headquarters, 3000 ft [ca. 900 m], 3–5 Jul 1999, Woodruff, blacklight trap, 8♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 16♀ (FSCA, NMNH). 11.5 km S of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 1♀ (NMNH).

*Oxyethira (Mesotrichia) scopulina*Flint and Sykora, **new species**

(Fig. 29)

This species is closely related to *O. ortizorum* in that both have the posterolateral margin of the eighth segment produced into an elongate, apically rounded lobe and a long dorsolateral process from the ninth segment that ends in a large brush of setae. From *O. ortizorum*, *O. scopulina* may be distinguished by the dorsolateral process of the ninth segment being shorter than the posterolateral lobe of the eighth segment, in the structure of the subgenital plate and ninth sternal complex, and the possession of two elongate spines on the phallus. The female terminalia are distinguished by the looped dark mark laterally on the eighth segment and the indistinct internal sclerites.

Adult Male.—Length of forewing, 3–3.5 mm. Color pale brown, forewing with two black spots, one in center, other on posterior margin before midlength, fringe mostly fuscous. Seventh sternum with large, apicomeresal, pointed process. Genitalia: Eighth segment deeply divided ventromesally, posterolateral margin produced into long plate, rounded apically. Ninth segment greatly produced anteroventrally through seventh segment; dorsal margin near posterior bearing elongate, broad process ending in brush of large setae, not attaining apex of eighth segment plate. Tenth tergum membranous. Subgenital plate band-like, bearing pair of sharp, ventrally directed points from apex. Bilobed process with apicolateral angles slightly developed in ventral aspect, bearing terminal seta. Inferior appendage short, blackened point in lateral aspect; small, black, mesal, triangular point in ventral aspect. Phallus long, slender, with short, tubular base, narrowing beyond into slender, strap-like sclerite with membranous side; with two long, slender, curved spines, one apically, other near midlength, both with membranous attachment; ejaculatory duct visible only in tubular base.

Female.—Size and color as in male. Genitalia: Sixth sternum with distinct apicomeresal point. Eighth sternum produced into posteromesal lobe, bearing dark line directed anterolaterad, with lateral ends looped back posteriad, cuticle slightly darkened posteriad of this line. Eighth tergum appearing to lack anterolateral apodemes, slightly produced dorsad in lateral view. Spermathecal sclerite almost wholly membranous, and nebulous.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC. Peravia Province:** 3 km SW La Nuez, upper Río Las Cuevas, 18°40'N, 70°36'W, 1850 m, 5–6 August 1990, Rawlins & Thompson (CMNH) Paratypes: same data, 3♂, 4♀ (CMNH, NMNH). [**La Vega Province:** El Convento, 12 km SE Constanza, 18°51.5'N, 70°41.9'W, 1400 m, 6–13 June 1969, Flint & Gómez, 2♀ (NMNH).

Oxyethira (Dampftrichia) cirrifera Flint

Oxyethira cirrifera Flint, 1964:57 [♂, ♀, Puerto Rico]. Flint, 1968a:42 [♂, ♀, Jamaica]; Flint, 1968b:55 [Dominica]; Kelley & Morse, 1982:258 [to synonymy with *O. arizona* Ross]; Kumanski, 1987:26 [♀, Cuba]; Botosaneanu, 1989:101 [Martinique, as *O. arizona*]; Botosaneanu, 1991a:130 [Haiti]; Botosaneanu & Hyslop, 1998:16 [Jamaica, as valid species].

The exact status of *O. cirrifera* is not clear; Kelley and Morse (1982) believed it is a synonym of *O. arizona* Ross, but Botosaneanu and Hyslop (1998) thought it a valid species. All agree that the continental form is very close to the insular one. Under the name *O. cirrifera*, the species is reported from all the Greater Antillean islands and as far south in the Lessers as Martinique. On the mainland, *O. arizona* is known from the southwestern United States as far south as Costa Rica.

Although recorded from Haiti (Botosaneanu, 1991a), these are the first records from the Dominican Republic. We have seen it from the provinces of El Seibo, Hato Mayor, Independencia, La Altagracia, La Romana, Monte Cristi, and Pedernales, indicative of a wide distribution over the island.

Material Examined.—**DOMINICAN REPUBLIC. El Seibo Province:** Pedro Sanchez, small stream, 10 June 1976, Woodruff, 1♂, 1♀ (FSCA). **Hato Mayor Province:** Mango Limpio, 23 km N Hato Mayor, 9 June 1986, Woodruff & Stange, 2♂, 9♀ (FSCA, NMNH). **Independencia Province:** Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 2♀ (NMNH). **La Altagracia Province:** La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 2♀ (FSCA). Nisibón "Papagallo," 16–19 June 1998, Woodruff & Freytag, 1♂ (FSCA). Higueral, 19 March 1985, Woodruff & Drummond, 2♀ (FSCA). **La Romana Province:** La Romana, 16 September 1976, Folch, 2♀ (FSCA). **Monte Cristi Province:** Monte Cristi, 4 June 1986, Miller & Stange, 3♀ (FSCA). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 18 March 1999, Flint, 1♂, 2♀ (NMNH).

Oxyethira (Loxotrichia) janella Denning

Oxyethira janella Denning, 1948:397 [♂, ♀, USA]. Flint, 1968a:42 [♂, ♀, Jamaica]; Botosaneanu, 1991a:32 [Haiti]; Botosaneanu, 1995:32 [Dominican Republic]; Flint, 1996a:98 [Cuba, Hispaniola, Jamaica, Puerto Rico, Guadeloupe, and Dominica.]

Oxyethira neglecta Flint, 1964:57 [♂, ♀, Puerto Rico]. Flint, 1968a:42 [to synonymy].

This species is very close to *O. tica* Holzenthal and Harris, which was not recognized until 1992. As a consequence early records of *O. janella* from Barbados (Botosaneanu, 1990) and Martinique (Botosaneanu, 1989) need to be reconfirmed, as *O. tica* seems to be the only species known from south of Dominica.

In contrast to the Lesser Antilles, *O. janella* is the only species of the pair found on the Greater Antilles. It has been recorded from all the major islands and in Haiti and the Dominican Republic where it was known from Duarte, Independencia, La Vega, and Monte Plata Provinces. We here add the provinces of Azua, Barahona, Elias Piña, El Seibo, Hato Mayor, La Altagracia, La Romana, Monte Cristi, Pedernales, Puerto Plata, San Cristobal, and San Juan.

Material Examined.—**DOMINICAN REPUBLIC. Azua Province:** Sec. Canoa, Mirador de la Presa, Yaqui del Sur, 30 September 1978, Woodruff, 2♀ (FSCA). **Barahona Province:** San Rafael, 8.3 km S Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 22 March 1999, Flint, 13♂, 1♀ (NMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 18♀ (FSCA). **El Seibo Province:** Río Quisibani, E El Seibo, 18°45.3'N, 68°55.7'W, 12 May 1995, Flint, 3♂,

11♀ (NMNH). Pedro Sanchez, small stream, 10 June 1976, Woodruff, 20♂, 25♀ (FSCA). Hotel Santa Cruz, 28 May 1985, Woodruff & Stange, 2♀ (FSCA). **Hato Mayor Province:** Mango Limpio, 23 km N Hato Mayor, 9 June 1986, Woodruff & Stange, 1♂, 1♀ (FSCA). **Independencia Province:** La Descubierta, 3 August 1983, Woodruff, 3♂, 4♀ (FSCA). Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 2♂, 14♀ (NMNH). Río Guyabal, 4.5 km N Postre Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 3♂, 7♀ (NMNH). **La Altagracia Province:** La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 3♂, 6♀ (FSCA); same, but sweeping, 1♂ (FSCA). 2 km E Nisibón, Río Nisibón, 12 June 1986, Woodruff & Stange, 2♀ (FSCA). Higueral, 19 March 1985, Woodruff & Drummond, 6♂, 12♀ (FSCA). **La Romana Province:** La Romana, 16 September 1976, Folch, 2♂, 1♀ (FSCA). **La Vega Province:** Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 12♂, 38♀ (NMNH); same, but 19–21 May 1995, 10♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°09.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 5♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 2♀ (NMNH). El Convento, 12 km SE Constanza, 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 2♀ (NMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 6♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 4♀ (FSCA). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra", along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 1♀ (FSCA). **Monseñor Nouel Province:** Río Yuna, Bonaio, 600 ft [ca. 180 m], 18 April 2000, Woodruff & Henry, 1♂, 6♀ (FSCA). **Monte Cristi Province:** Monte Cristi, 4 June 1986, Miller & Stange, 3♂, 25♀ (FSCA). **Monte Plata Province:** Bayaguana, 22 August–2 September 1991, Brown, 1♂, 2♀ (FSCA). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 18♂, 61♀ (NMNH); same, but 18 March 1999, 9♂, 12♀ (NMNH); same, but 20 March 1999, 13♂, 30♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 11♂, 7♀ (CMNH). 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 1♂, 3♀ (FSCA). N Cabo Rojo, km 21, 1200 ft. (365 m), 1 July 1998, Woodruff & Baranowski, 2♂, 1♀ (FSCA); same, but 19 June 1976, Woodruff, 1♂, 7♀ (FSCA). **Puerto Plata Province:** Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 7♂, 146♀ (NMNH). **San Cristóbal Province:** La Trinidad, NE Sierra de Agua, 2 May 1978, Woodruff et al., 7♂, 9♀ (FSCA). **San Juan Province:** at river, 1 km off rd. to Vallejuelo, El Capá, 21 May 1985, Woodruff et al. 1♂ (FSCA).

Oxyethira (Loxotrichia) puertoricensis Flint

Oxyethira puertoricensis Flint, 1964:55 [♂, ♀, larva, case, Puerto Rico]. Flint, 1968a:40 [♂, ♀, larva, case, Jamaica]; Botosaneanu, 1991a:132 [Haiti]; Botosaneanu, 1995:32 [Dominican Republic]. *Oxyethira quelinda* Botosaneanu, 1977:267 [♂, Cuba]. Botosaneanu, 1991a:132 [Haiti]; Botosaneanu, 1995:32 [to synonymy].

This rather distinctive species has been reported from only the Greater Antilles where it is known from all four of the major islands. It has been reported from both Haiti and the Dominican Republic where it was taken in the provinces of Duarte, Independencia, La Vega, Monte Plata, and Pedernales. We have found this species quite common and can add records from the provinces of Azua, Barahona, Elias Piña, El Seibo, La Altagracia, Monseñor Nouel, Puerto Plata, San Cristobal, and San Juan.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province:** Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 7 August 1990, Rawlins et al., 5♀ (CMNH); same, but 3–4 October 1991, 2♂, 13♀ (CMNH). **Barahona Province:** San Rafael, 8.3 km S of Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 11 May 1995, Flint, 1♂ (NMNH); same, but 22 March 1999, 1♂, 2♀ (NMNH). Río Nizaito, 6 km NW Paraiso, 18°02'N, 71°12'W, 170 m, 25–26 July 1990, Rawlins &

Thompson, 8♂, 19♀ (CMNH). Río Nizaito, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint & Mathis, 2♂, 5♀ (NMNH). Confluence Río Nizaito and Río Cortico, 9.2 km NW Paraiso, 18°03'N, 71°12'W, 230 m, 9–10 August 1990, Rawlins & Thompson, 4♂, 3♀ (CMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 46♂, 307♀ (FSCA). **El Seibo Province:** Pedro Sanchez, small stream, 10 June 1976, Woodruff, 1♂ (FSCA). Hotel Santa Cruz, 28 May 1985, Woodruff & Stange, 1♂ (FSCA). **Independencia Province:** La Descubierta, 3 August 1983, Woodruff, 1♀ (FSCA). Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 3♂, 4♀ (NMNH). Río Guyabal, 4.5 km N Postre Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 8♂, 4♀ (NMNH). **La Altagracia Province:** Higueral, 19 March 1985, Woodruff & Drummond, 1♂ (FSCA). **La Vega Province:** Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 10♂, 93♀ (NMNH); same, but 19–21 May 1995, 2♂, 9♀ (NMNH). Arroyo Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint, 5♂, 20♀ (NMNH). Constanza, 27 April 1978, Woodruff & Fairchild, 8♂, 6♀ (FSCA). El Convento, 12 km SE Constanza, 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 11♂, 11♀ (NMNH); same, but 6–13 June 1969, Flint & Gómez, 3♂, 7♀ (NMNH). 11.5 km S of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 3♂, 1♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°09.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 7♂, 8♀ (NMNH). Near mouth Arroyo Los Dajaos, 5 km SE Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 1♂ (CMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 1♂ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 1♂, 15♀ (FSCA). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra," along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 3♂ (FSCA). **Monseñor Nouel Province:** Hotel Jacaranda, Bonaio, 27–28 June 1998, Woodruff & Baranowski, 1♀ (FSCA); same, but 18 April 2000, Woodruff & Henry, 1♂, 2♀ (FSCA). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 84♂, 132♀ (NMNH); same, but 18 March 1999, 44♂, 81♀ (NMNH); same, but 20 March 1999, 18♂, 38♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 38♂, 22♀ (CMNH). Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 11♂, 22♀ (NMNH). 20.5 km N Cabo Rojo, 12 April 2000, Woodruff & Henry, 40♂, 31♀ (FSCA). N Cabo Rojo, km 21, 1200 ft. [365 m], 1 July 1998, Woodruff & Baranowski, 2♂, 1♀ (FSCA); same, but 19 June 1976, Woodruff, 41♂, 30♀ (FSCA); same, but km 24, 3000 ft (915 m), 2 July 1998, 4♂, 3♀ (FSCA); same, but 11 June 1998, Woodruff & Freytag, 1♂, 1♀ (FSCA). **Puerto Plata Province:** Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 4♂, 63♀ (NMNH). Los Hidalgos, 4–5 June 1969, Flint & Gómez, 4♂, 2♀ (NMNH). **San Cristóbal Province:** La Toma, N of San Cristóbal, 9–10 June 1969, Flint & Gómez, 2♂, 1♀ (NMNH). La Trinidad, NE Sierra de Agua, 2 May 1978, Woodruff et al., 12♂, 5♀ (FSCA). **San Juan Province:** at river, 1 km off rd. to Vallejuelo, El Capá, 21 May 1985, Woodruff et al., 15♂, 31♀ (FSCA).

Oxyethira (Daupfitrichia) simulatrix Flint

Oxyethira simulatrix Flint, 1968a:43 [♂, ♀, Jamaica]. Holzenthal and Harris, 1992:174 [Costa Rica]. *Oxyethira simulatrix cubana* Kumanski, 1987:27 [♂, Cuba]. Botosaneanu, 1991a:130 [Haiti, attributed ♀ is that of *O. tega*]; Botosaneanu and Hyslop, 1998:16 [Jamaica]. **New synonym.** *Orthotrichia* sp. Kumanski, 1987:32 [Cuba, misidentified female of *O. simulatrix*]. *Oxyethira (Daupfitrichia) mirebalina* Botosaneanu. Botosaneanu, 1991a:130, fig. 56 [Haiti, ♀ allotype, is misidentified ♀ of *O. simulatrix*].

Flint has now compared topotypic examples from Jamaica with the description and figures of the subspecies *O. simulatrix cubana*. The purported differences in the tip

of lateral process of the eighth tergum, the asymmetry of the ninth sternum, and the apices of eighth sternum and claspers are all found in the types under careful inspection to agree with the condition described for *O. simulatrix cubana*. The original figures were inaccurate in these details.

The allotype female of *O. mirebalina* has been studied and compared side-by-side with known examples of *O. simulatrix* and been found identical. It is to be noted that Botosaneanu (1991a) recorded two males of *O. simulatrix* from the same locality as this female. It is unknown if the other females recorded under *O. mirebalina* are those of *O. simulatrix* or true *O. mirebalina*.

The two Cuban females recorded by Kumanski (1987) as *Orthotrichia* sp. were borrowed many years ago. Notes taken at that time state that these were a species of *Oxyethira*, either *O. simulatrix* or *O. florida*. The illustrations now look exactly like *O. simulatrix* and less like *O. florida* (see Kelley and Morse, 1982, fig. 18). The specimens may have been from the same locality as the type of *O. simulatrix cubana*, and *O. florida* was not taken by Kumanski on his trip. For these reasons we ascribe the record to *O. simulatrix*.

This species has a wide distribution on the Greater Antilles, although not yet recorded from Puerto Rico. It also is found in Central America with records from Costa Rica, but we have seen it also from Mexico and Panama. Although recorded from Haiti, these are the first records from the Dominican Republic. We have it from the Distrito Nacional and provinces of Independencia, La Altagracia, La Vega, Monte Cristi, Monte Plata, and Puerto Plata.

Material Examined.—DOMINICAN REPUBLIC. [Distrito Nacional]: Cachón de la Rubia, nr. Central Ozama, 10 June 1969, Flint & Gómez, 1♀ (NMNH). **Independencia Province**: La Descubierta, 3 August 1983, Woodruff, 1♀ (FSCA). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 2♀ (NMNH). **La Altagracia Province**: La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 1♂, 25♀ (FSCA, NMNH, CMNH). Nisibón "Papagallo", 16–19 June 1998, Woodruff & Freytag, 1♀ (FSCA). Higueral, 19 March 1985, Woodruff & Drummond, 2♀ (FSCA). **La Vega Province**: Río Baiguat, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 3♂, 5♀ (NMNH); same, but 19–21 May 1995, 5♂, 3♀ (NMNH). **Monte Cristi Province**: Monte Cristi, 4 June 1986, Miller & Stange, 19♀ (FSCA). **Monte Plata Province**: Bayaguana, 22 August–2 September 1991, Brown, 1♀ (FSCA). **Puerto Plata Province**: Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 1♀ (NMNH).

HAITI. Département du Sud, Les Cayes, petit ruisseau a l'hotel "le Relais", 30 Oct–5 Nov 1979, L. Botosaneanu, 1♀ (allotype of *O. mirebalina*) (ZMUA).

Oxyethira (Dampftrichia) tega Flint

Oxyethira tega Flint, 1968a:44 [♂, ♀, Jamaica]. Flint, 1968b:56 [♂, ♀, Dominica]; Botosaneanu, 1977:273 [Cuba].

Oxyethira (Dampftrichia) simulatrix cubana. -Botosaneanu, 1991a:130, fig. 52 [Haiti, misidentified female of *O. tega*].

The known distribution of this species is scattered across the Antilles: Cuba, Jamaica, Hispaniola, and

Dominica with the subspecies *O. tega antillarum* reported from Guadeloupe. A female of this species was reported from Haiti under the name of *O. simulatrix cubana* (this female has been studied and it is *O. tega*). We have seen two collections from La Vega and Elias Piña Provinces in the Dominican Republic.

Material Examined.—DOMINICAN REPUBLIC. **La Vega Province**: Río Baiguat, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 19–21 May 1995, Flint, 1♂, 1♀ (NMNH). **Elias Piña Province**: Río Limpio, 2400 ft. (ca. 730 m), 26–27 Apr 2000, Woodruff & Henry, blacklight trap, 1♂, 3♀ (FSCA).

HAITI. Département du Sud, Les Cayes, petit ruisseau a l'hotel "le Relais", 30 Oct–5 Nov 1979, L. Botosaneanu, 1♀ (ZMUA).

Oxyethira species

Oxyethira sp. Botosaneanu, 1995:29.

The unique female figured under this name has been borrowed and studied. It matches the females of none of the species recorded above. It was originally suggested as the female of *O. ortizorum*, but the females treated as *O. ortizorum* in this paper are quite different. We suspect that it represents yet another undescribed species on the island of the subgenus *Mesotrichia*, although it is possible that one of the known species has misassociated sexes. If so, then the female of that species would be an undescribed species.

Material Examined.—DOMINICAN REPUBLIC. [La Vega Province]: Cordillera Central, spring brook near Salto Agua Blanca (Convento), 11 May 1995, Botosaneanu, light, 1♀ (ZMUA).

Family Leptoceridae Genus *Nectopsyche* Müller

This is a speciose genus limited to the New World. One or more species have been recorded from all the Greater Antillean islands, but none are known from the Lesser Antilles. The larvae have been described a number of times (Flint, 1968a; Haddock, 1977; Ross, 1944; Wiggins, 1996). They construct tubular cases utilizing many different materials, depending on the species.

Nectopsyche cubana (Banks)

Leptocella cubana Banks, 1938:299, fig. 13 [♂, Cuba]. Flint, 1967:21, fig. 99 [♂, lectotype]; Flint, 1968a:54, figs. 130, 132 [♂, ♀, Jamaica].

Nectopsyche cubana (Banks): Flint, 1992:387 [Puerto Rico, Dominican Republic]; Botosaneanu, 1996:19 [Dominican Republic].

This species has been recorded from all the Greater Antillean islands. It appears to be quite common in the Dominican Republic, being recorded from the Provinces of Azua, Dajabón, Elias Piña, El Seibo, Hato Mayor, La Altagracia, La Vega, Monseñor Nouel, Pedernales, Puerto Plata, San Juan, and Santiago.

Material Examined.—DOMINICAN REPUBLIC. **Azua Province**: Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 7 August 1990, Rawlins et al., 1♀ (CMNH). **Dajabón Province**: 9 km S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 4♂, 4♀ (CMNH). Río Massacre, Balneario Don Miguel, 7 km SW

Dajabón, 40 m, 26 May 1973, D. & M. Davis, 2♂ (NMNH). 13 km SE Loma de Cabrera, ca 400 m, 20–22 May 1973, D. & M. Davis, 1♂, 3♀ (NMNH). **Elias Piña Province:** 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 1♂, 1♀ (NMNH). Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 10♂, 17♀ (FSCA). **El Seibo Province:** Río Quisibani, E El Seibo, 18°45.3'N, 68°55.7'W, 12 May 1995, Flint, 10♂, 4♀ (NMNH). **Hato Mayor Province:** Parque Los Haitises, E of Trepada, 12 km E El Valle, 18°59'N, 69°30'W, 145 m, 6 July 1995, Rawlins et al., 5♂, 4♀ (CMNH). **La Altagracia Province:** 2 km E Nisibón, Río Nisibón, 12 June 1986, Woodruff & Stange, 3♀ (FSCA). **La Vega Province:** Near mouth Arroyo Los Dajaos, 5 km SE Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 30♂, 2♀ (CMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 2♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 1♂, 8♀ (FSCA). 5 km W Manabao, Finca Eliado Fernandez "Paso la Perra," along Río Yaque del Norte, 3050 ft [ca. 930 m], 19–23 April 2000, Woodruff & Henry, 8♂, 35♀ (FSCA); same, but 15 May 2001, Woodruff & class, 11♂, 3♀ (FSCA). 2.5 km SW Piñar Bonito, 18°51'N, 70°43'W, 1430 m, 26 November 1992, Rawlins et al., 1♂, 4♀ (CMNH). Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 18♂, 7♀ (NMNH); same, but 19–21 May 1995, 11♂, 4♀ (NMNH). Río Baiguate, Bamboo Hole Canyon, 5 km SE Jarabacoa, 580 m, 22 July 1987, Rawlins & Davidson, 1♀ (CMNH). Salto Guasara, 9.5 km W Jarabacoa, 19°04.4'N, 70°42.1'W, 680 m, 19 May 1995, Flint & Mathis, 14♀ (NMNH). Jarabacoa, 3–4 June 1969, Flint & Gómez, 3♂, 1♀ (NMNH); same, but 13 November 1984, Spangler & Faitoute, 3♂, 1♀ (NMNH). Río Camú, 19 km NE Jarabacoa, 12 June 1969, Flint & Gómez, 2♂, 2♀ (NMNH). Arroyo La Palma, 9.5 km E El Río, 19°0.9'N, 70°33.5'W, 980 m, 7 May 1995, Flint, 1♀ (NMNH). La Palma, 12 km E of El Río, 2–13 June 1969, Flint & Gómez, 1♂ (NMNH). Convento, 12 km SE Constanza, 6–13 June 1969, Flint & Gómez, 7♂, 21♀ (NMNH); same, but 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 8♂, 4♀ (NMNH). **Monseñor Nouel Province:** Bonao, Hotel Jacaranda, 27–28 June 1988, Woodruff & Baranowski, 1♀ (FSCA). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 10♂, 1♀ (NMNH); same, but 18 March 1999, Flint, 4♂, 3♀ (NMNH); same, but 20 March 1999, 1♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 25♂, 21♀ (CMNH). **Puerto Plata Province:** Río Camú, 14 km E Puerto Plata, 19°11.9'N, 70°37.4'W, 20 m, 17 May 1995, Flint, 1♂, 4♀ (NMNH). [**San Cristobal Province:** at or near Naranjo Dulce, 13 km N San Cristobal]; S. Francisco Mts., Sept 1905, Aug. Busck, 2♀ (NMNH). **San Juan Province:** at river, El Capá, 21 May 1985, Woodruff et al., 1♀ (FSCA). **Santiago Province:** 1 km NE San José de las Matas, 19°21'M, 70°56'W, 540 m, 11 July 1992, Rawlins et al., 1♀ (CMNH).

Genus *Oecetis* McLachlan

This is a large and diverse genus that is found in all regions of the world, except the polar. It seems to be able to disperse readily to isolated islands, including many in the Pacific. The immature stages of many species have been described (Flint, 1968b; Ross, 1944; Wiggins, 1996). They all construct portable, tubular cases, mostly of plant material, but some species groups use small sand grains.

Oecetis inconspicua (Walker)

Leptocerus inconspicua Walker, 1852:71 [U.S.A.].

Oecetis inconspicua (Walker): Betten and Mosely, 1940:67, fig. 32 [♂, redescription of type]; Flint, 1964:64, figs. 17A–B [♂, ♀, Puerto Rico]; Flint, 1968a:54, figs. 128, 129 [♂, ♀, Jamaica]; Botosaneanu, 1991a:134 [Haiti].

O. inconspicua is a very common species widely distributed in the New World. On the continent it is

known from Canada south through North and Central America into northern South America, at least. It has been recorded from all the Greater Antillean islands and Trinidad, but none of the other Lesser Antillean islands. It does not seem abundant on Hispaniola, but may be fairly widely distributed: Barahona, Independencia, La Vega and Monte Cristi Provinces, and the Departement de l'Ouest in Haiti.

Material Examined.—**DOMINICAN REPUBLIC.** **Barahona Province:** 24 km E Barahona, 27 September 1985, Woodruff & Stange, 1♂ (FSCA). 5 km NW Barahona, Agr. Exp. Station, 29–30 April 1978, Woodruff et al., 1♂, 4♀ (FSCA). **Independencia Province:** Río Las Damas, 2 km S Duvergé, 18°22.0'N, 71°31.4'W, 10 m, 24 March 1999, Flint, 2♂, 2♀ (NMNH). Río Guyabal, 4.5 km N Postrer Río, 18°34.7'N, 71°37.7'W, 150 m, 25 March 1999, Flint, 1♂, 1♀ (NMNH). **La Vega Province:** Jarabacoa, 3–4 June 1969, Flint & Gómez, 2♀ (NMNH). Río Camú, 19 km NE Jarabacoa, 12 June 1969, Flint & Gómez, 1♀ (NMNH). Río Baiguate, 1–2 km S Jarabacoa, 19°06.9'N, 70°37.0'W, 520 m, 8–9 May 1995, Flint, 1♀ (NMNH). **Monte Cristi Province:** 10 km S Monte Cristi, 5 m, 23 May 1973, D. & M. Davis, 1 w/o abdomen (NMNH).

HAITI. [Département de l'Ouest]: Manneville, 16–17 November 1934, Darlington, 1♀ (MCZ).

Oecetis haitises Flint and Sykora, new species (Fig. 30)

A single female is known from Hato Mayor Province that is clearly different from the preceding species. At first it was believed to be *O. pratti* Denning, but comparison with material of *O. pratti* showed it lacks the black spots on the wings present in *O. pratti*. When the abdomen was cleared, the genitalia were seen to be abundantly distinct from those of *O. pratti*. The only other Greater Antillean *Oecetis* is *O. maspeluda* Botosaneanu, described from Cuba. Study of its types shows it to be virtually identical to *O. pratti*, except for its more strongly developed scent hairs on the male hind wing. The female genitalia appear inseparable from those of *O. pratti*. Thus, no species currently known from the Antilles is the same as our Hispaniolan example, nor does it seem likely that this is a continental species.

In comparison with *O. pratti*, *O. haitises* lacks all wing markings, the lateral lobe of the ninth segment is downturned at its apex, the tenth segment is undeveloped, and the anterior margin of internal sac is deeply indented mesally.

Adult Male.—Unknown.

Female.—Length of forewing, 6 mm. Color stramineous, unmarked. Genitalia: Ninth segment broad laterally, dorsally slightly overhanging, with pair of small knob-like protuberances; lateroventral lobe as long as high, apex decurved. Cercus protruding, broad in both lateral and dorsal aspects. Tenth segment undeveloped. Vaginal sclerites shield-shaped, with elongate posterolateral supports; with central opening and long, tongue-like lobe. Internally with heavily sclerotized structure (probably connected to vaginal sclerite by membrane); almost spherical in lateral aspect with anterior half darkened, in

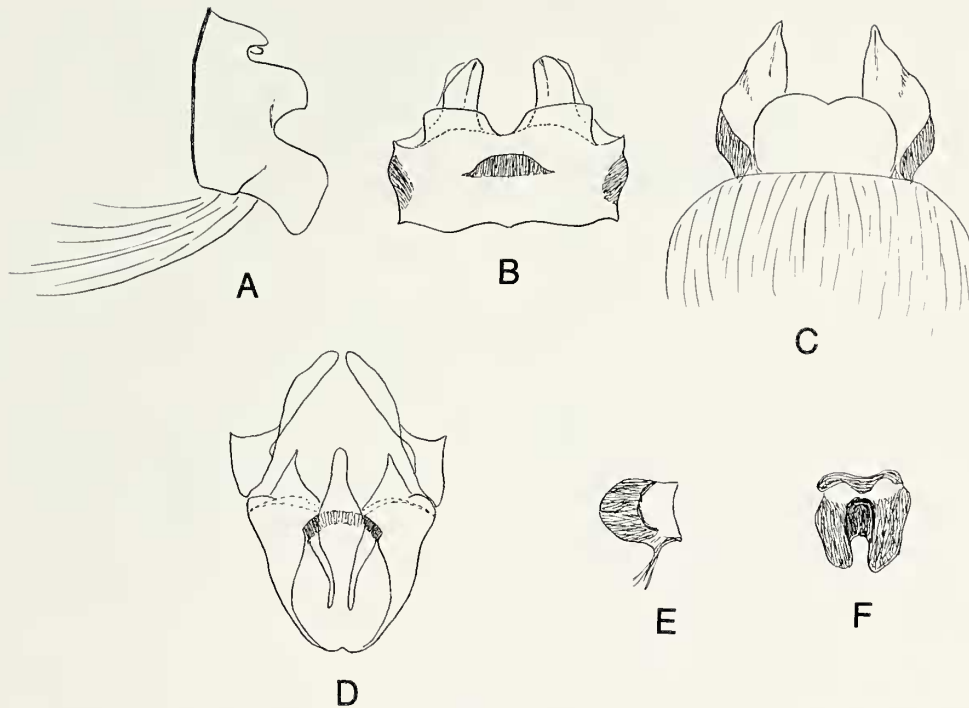


Fig. 30.—*Oecetis haitises* new species, female genitalia: A, Lateral. B, Dorsal. C, Ventral. D, Vaginal sclerites, ventral. E, Sclerotized vaginal structure, lateral. F, Same, ventral.

ventral aspect with lateral lobes, and deep anteromesal sinus.

Type Material.—Holotype, female: **DOMINICAN REPUBLIC**. **Hato Mayor Province**: Parque Los Haitises, 3 km W Cueva de Arena, 19°04'N, 69°29'W, 20 m, 7–9 July 1992, J. Rawlins, R. Davidson, S. Thompson, C. Young, mesic lowland forest (CMNH).

Genus *Setodes* Rambur

This is a genus widely distributed in the world, and extremely diverse in southern Asia (Schmid, 1987). It is notably absent in New Zealand, western North America and all of Central and South America. Heretofore it was unknown from the Antilles except for two species found in Dominican amber (Wichard, 1995b). The following species is included in *Setodes* with some hesitation as it seems rather aberrant, but no other described genus seems more appropriate. The larvae of several species have been described (Wiggins, 1996; Yang and Morse, 1989). They construct very solid, cylindrical and slightly curved, sand grain cases. They appear to burrow into the substrate, often in fine sand found in the lee of rocks.

Setodes anomalus Flint and Sykora, new species (Fig. 31)

As its specific epithet implies, this species is hard to place in the body of the genus, in spite of its recent revision by Schmid (1987). The apparent lack of parameres and presence of a sclerite between the tenth tergum and preanal

appendages are very uncommon in the genus. The venation is within the bounds of variation, although the discoidal cell is extremely long and the crossveins are unnoticeable. The situation with the mesokatepisternum and epicranial sutures (see Ross, 1944 p. 21) is also variable. Examples of various species from around the world shows that the mesokatepisternum may be truncate or pointed, and epicranial sutures may be present or absent in various combinations. The male genitalia are very distinctive with the elongate preanal appendage, presence of a sclerotized plate between the tenth tergum and preanal appendage, knob-like inferior appendage with two appendages, and simple tubular phallus with parameres reduced to darkened structures appressed to the phallosome. The female is also distinctive with its elongate preanal appendage, fusion of the tenth tergum to the lamella, and structure of the vaginal sclerites.

Adult Male.—Length of forewing 6 mm. Color in alcohol, brown; forewing brown with indications of darker maculae. Epicranial and lateral sutures of head present, epicranial stem about as long as anterior arms. Forewing discal cell extending to 60% distance from apex to base of wing; crossveins not apparent except sectoral crossvein closing discal cell, which appears very oblique. Mesokatepisternum elongate, truncate dorsally. Spurs 0,2,2. Genitalia: Ninth segment broad, anterior and posterior margins parallel. Preanal appendage elongate, clavate. Tenth tergum declivous tapering apicad in lateral aspect, deeply divided mesally in dorsal aspect; lateral sclerite of

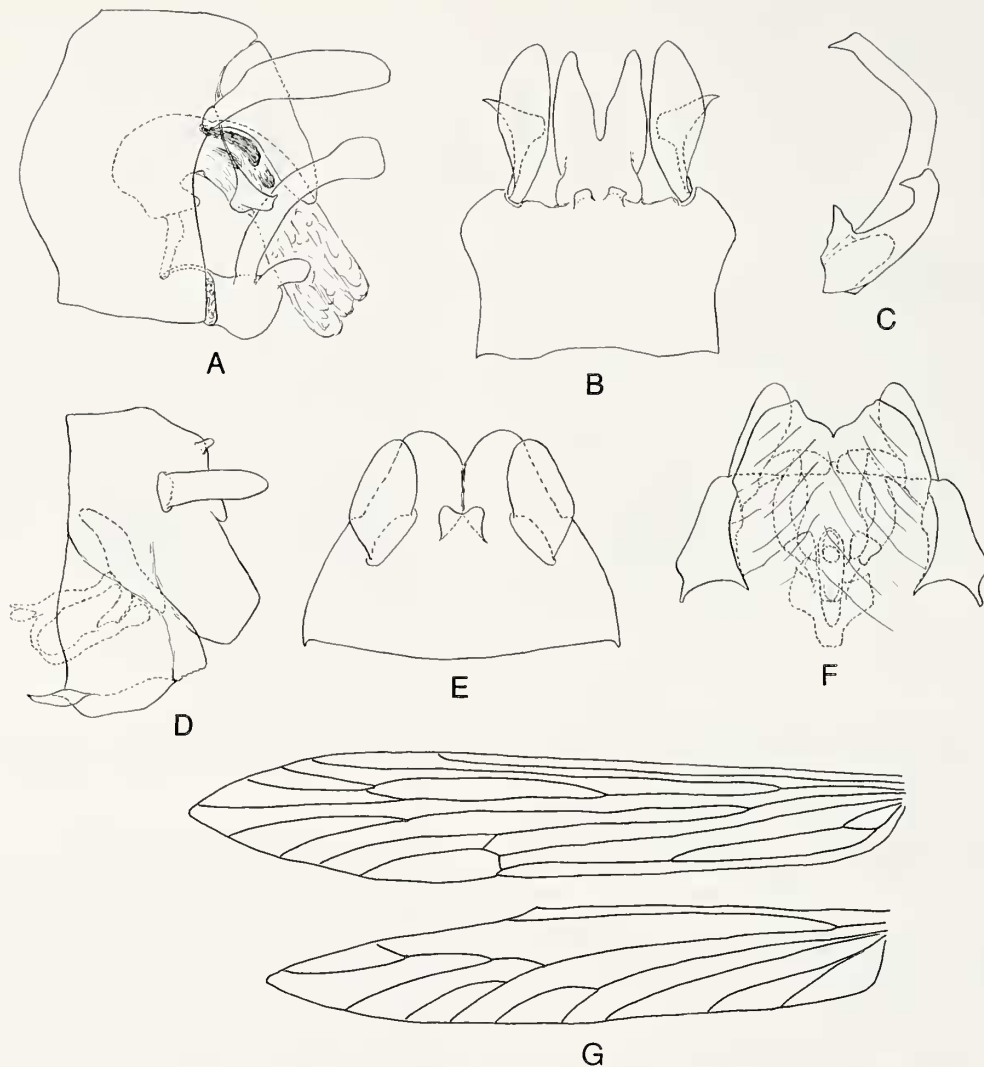


Fig. 31.—*Setodes anomalus* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendage, posteroventral. Female genitalia: D, Lateral. E, Dorsal. F, Ventral. Wing venation: G, Dorsal.

tenth tergum present, with its apex strongly sclerotized and directed ventrolaterad. Inferior appendage spherical basally, with two dorsal processes; apical one terete about twice as long as wide, dorsal one terete, ten times as long as broad; in posterior aspect base with acute apex directed caudad and each process ending in triangular point directed mesad. Phallus tubular, angled posteroventrad beyond base, apex membranous; at curve, with paired dorsal, dark structures appressed to phallosome.

Female.—Length of forewing, 6 mm. Color and structure as in male. Genitalia: Ninth segment broad, anterior margin vertical in lateral aspect. Preanal appendage elongate, depressed. Tenth tergum with pair of small processes basomesally, fused to dorsal surface of lamellae. Lamella broad, apex obliquely truncate, angled posteroventrad, apex emarginate mesally in dorsal aspect. Gonopod plate lightly sclerotized, posterior margin

slightly bilobate; junction of lateral margin and ninth segment developed as thin, overhanging ridge. Vaginal sclerites complex; central elongate structure with opening, lateral wings convoluted and sclerotized and pair of posterior supporting bands.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, Peravia Province**: 3 km SW La Nuez, tributary to Río Las Cuevas, 18°40'N, 70°36'W, 1870 m, 5–6 August 1990, J. Rawlins & S. Thompson (CMNH). Paratypes: Same data, 1♂, 1♀ (CMNH, NMNH). **La Vega Province**: 8 km SE Constanza, near Valle Nuevo, 18°50'N, 70°42'W, 1930 m, 17 August 1990, J. Rawlins & S. Thompson, 1♂ (CMNH).

Family Odontoceridae
Genus *Marilia* Müller

The genus was originally described from the New World, where it is widely distributed, but is now known

from southern Asia and Australia. Its distribution is irregular in the Antilles, being found on Cuba, Jamaica and Hispaniola but not again till Trinidad. The larvae have been described a number of times (Flint, 1968a; Wiggins, 1996). The larvae live in lotic waters, and construct rigid, slightly curved, tubular cases of sand grains.

Marilia gracilis Banks

Marilia gracilis Banks, 1938:297, figs. 9, 21 [♂]. Flint, 1967:19, figs. 110, 111 [♂, lectotype].

This species is still known from only the type series collected in the Massif De La Selle. The basal segment of the inferior segment is noticeably longer and distinctly constricted at midlength in both lateral and posterior aspects and the apical segment is also proportionately longer and more curved than these segments are in *M. nigrescens*. We believe these differences are sufficient to merit recognition of these two forms as full species.

Material Examined.—HAITI. [Département de l'Ouest]: La Visite & vic., La Selle Range, 5–7000 ft. [1525–2135 m], Sept. 16–23 1934, M. Bates, ♂ holotype, 4♂ paratypes (MCZ).

Marilia nigrescens Banks, new status

Marilia gracilis var. *nigrescens* Banks, 1941:397.

Marilia gracilis nigrescens Banks: Flint, 1967:20, fig. 112 [♂, lectotype].

This species appears limited to the Cordillera Central in the Dominican Republic. It is virtually identical to *M. gracilis*, except that it is noticeably darker in coloration. The male genitalia of the two species differ slightly, especially in the basal segment of the inferior appendage which is shorter and tapers more regularly from base to apex in both lateral and posterior aspects and the apical segment that is not as strongly curved and proportionately shorter.

Material Examined.—DOMINICAN REPUBLIC. [La Vega Province]: Valle Nuevo, SE Constanza, c. 7,000 ft. [2135 m], Aug. '38, Darl.[ington], ♂ holotype, 1♂, 1♀ paratypes (MCZ). **Peravia Province**: 3 km SW La Nuez, upper Río Las Cuevas, 18°39'N, 70°36'W, 1880 m, 5–6 October 1991, J. Rawlins et al., 5♂, 1♀ (CMNH, NMNH); same, but 5–6 August 1990, 23♂, 3♀ (CMNH, NMNH, FSCA). **[Santiago Province]**: Valle de Bao, 5885 ft. [ca. 1795 m], 9 July 1992, Ivie, 1♀ (NMNH).

Marilia valga Flint and Sykora, new species
(Fig. 32)

On the basis of the male genitalia, this new species is closely related to *M. gracilis*. The coloration of the two species seems to be identical, but *M. valga* is smaller, forewing length 10 mm as opposed to 12–13 mm and the eyes are even closer dorsomesally. The mesal margin of the basal segment of the inferior appendage is strongly bent and the apical segment is even proportionately longer than these are in *M. gracilis*. Females of this species have been taken at widely scattered localities from near sea level to nearly 1900 meters elevation. This sex may be distin-

guished from that of *M. nigrescens* (the female of *M. gracilis* is unknown) by the ventral end of the ninth tergum: in *M. valga* it widens ventrad, with the end truncate, but in *M. nigrescens* it tapers to a sharp point.

Adult Male.—Length of forewing 10 mm. Color pale gray with darker maculae; hair of head, thorax and scape, hoary; flagellar segments dark with small, white ring; forewing pale gray irregularly maculate with dark gray, especially near chord. Eyes very large with very narrow furrow separating them middorsally. Spurs 2,4,4. Genitalia: Ninth segment with anterior margin concave for dorsal quarter, nearly vertical beneath; dorsal and ventral braces almost horizontal and parallel. Cercus elongate, slender, barely widened apicad. Tenth tergum with apex slightly angled, apicoventral angle strongly sclerotized, hooked lateroventrad. Inferior appendage slightly inflated basally in lateral aspect, in posterior aspect with base much widened, then sharply constricted for apical half; apical segment long, slender, curved mesad, surface with scattered rugosities. Phallus curved basally, phallosome with distinct cross band at midlength; phallosomal sclerite C-shaped with dorsal and ventral ends enlarged in lateral aspect, outer surface of endotheca rather strongly sclerotized.

Female.—Length of forewing, 8–10 mm. Color as in male. Genitalia: Eighth sternum with lateral portion produced and rugose. Ninth tergum ventrally widened, with small, anteroventral lobe, indented in dorsal or ventral aspects.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, Peravia Province**: 3 km SW La Nuez, upper Río Las Cuevas, 18°40'N, 70°36'W, 1850 m, cloud forest on river, 5–6 August 1990, J. Rawlins & S. Thompson (CMNH). Paratypes: Same data, 12♀ (CMNH, NMNH); same, but tributary to Río Las Cuevas, 1870 m, 1♀ (CMNH); same, but 18°39'W, 70°36'W, 1880 m, 5–6 October 1991, cloud forest on river, Rawlins et al., 2♀ (CMNH). **[La Vega Province]**: Convento, 12 km S of Constanza, 6–13 June 1969, Flint & Gómez, 1♀ (NMNH). **La Altagracia Province**: Río Nisibón, 2 km E Nisibón, 12 June 1986, Woodruff & Stange, 1♀ (FSCA).

Family Philopotamidae
Genus *Chimarra* Stephens

This is a very large genus, widely distributed over most of the world, but most speciose in tropical and subtropical regions. Blahnik (1998) listed 94 species of the subgenus *Chimarra* from the Neotropical region. The subgenus *Chimarrita* contains 18 species (Blahnik, 1997), the subgenus *Curgia* contains 92 species (Flint, 1998), and the remaining subgenus, *Otarrha* contains 31 species and subspecies (Blahnik, 2002). In the Old World nearly 400 species are known, but all are currently placed in the subgenus *Chimarra*. The subgenus *Chimarra* is lacking from the Greater Antilles, whereas the subgenus *Chimarrita* is lacking from the Lesser Antilles. Larvae, pupae and their nets and general habits are well known (Wallace and Malas, 1976; Wiggins, 1996). Wichard (1983a, 1983b) described five species from Dominican amber.

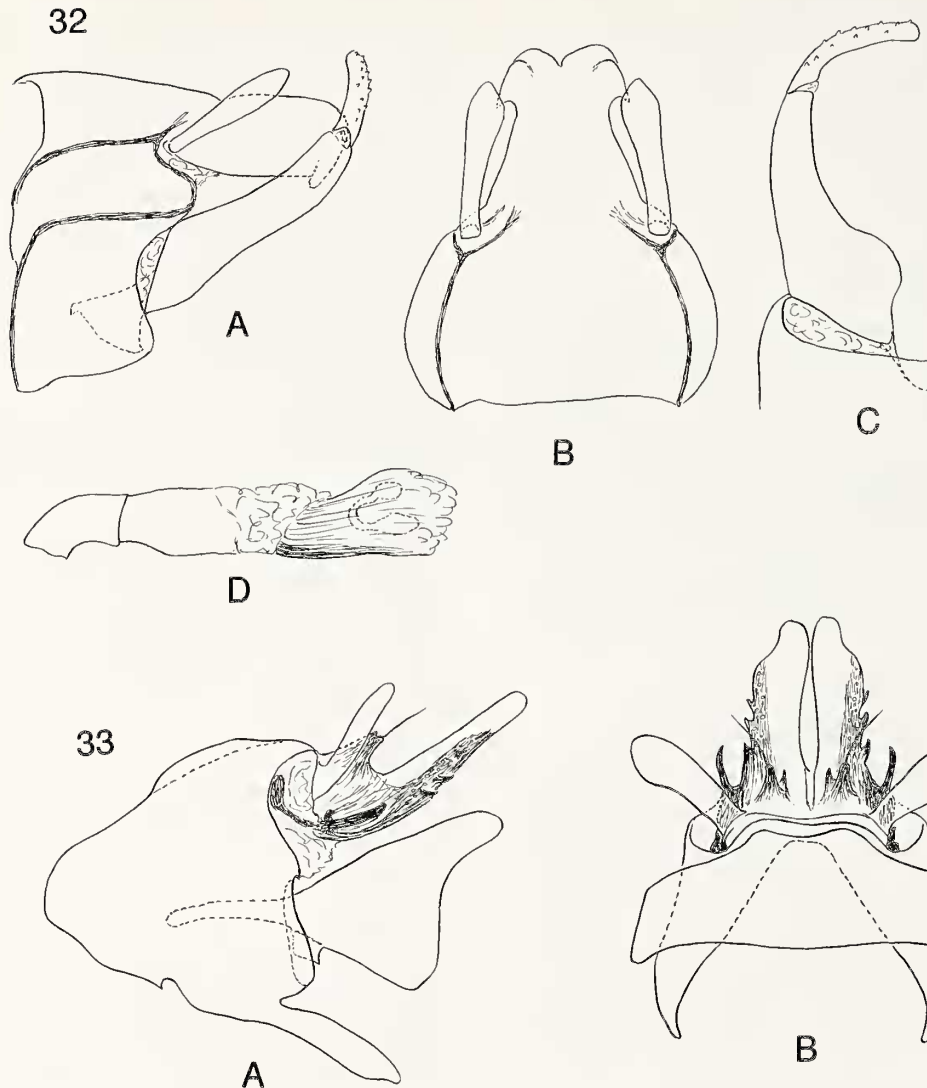


Fig. 32.—*Marilia valga* new species, male genitalia: A, Lateral. B, Dorsal. C, Inferior appendage, posteroventral. D, Phallus, lateral.

Fig. 33.—*Chimarra (Otarra) spinulifera baoruco* new subspecies, male genitalia: A, Lateral. B, Dorsal.

Chimarra (Curgia) braconoides (Walker)

Curgia braconoides Walker, 1860:179.

Chimarra braconoides (Walker): Betten and Mosely, 1940:15, fig. 7 [redescription of holotype].

Chimarra (Curgia) braconoides (Walker): Flint, 1998:52, figs. 1–5, 228–232 [redescription, Dominican Republic, Haiti].

This is the first caddisfly described from the island of Hispaniola. It is closely related to *Ch. (Cu.) gilvima-cula*, but can be distinguished by coloration—the pale marks on the forewing are larger and deep orange, rather than narrow and yellowish—and in the structure of the male genitalia. Extensive records of the species were given by Flint (1998), and the few new records that are available add only Barahona Province. It has been recorded from the provinces of Baoruco, Dajabón, El Seibo, Hato Mayor, Elías Piña, La Vega, Pedernales,

San Cristóbal, Santiago, and the Distrito Federal as well as Haiti.

Material Examined.—DOMINICAN REPUBLIC. **Barahona Province**: Río Nizaïto, 5 km N Paraiso, 18°01.5'N, 71°11.6'W, 150 m, 21 March 1999, Flint, 2♀ (NMNH). **Pedernales Province**: Río Mulito, 21 km N Pedernales, 280 m, 18°09.3'N, 71°45.6'W, 20 March 1999, Flint, 1♀ (NMNH). Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint, 2♀, plus 1♂ metamorphotype (NMNH).

Chimarra (Curgia) gilvima-cula Flint

Chimarra (Curgia) gilvima-cula Flint, 1998:52, figs. 233–236 [♂]. Botosaneanu, 1996:12 [Dominican Republic].

Chimarra braconoides (Walker) or *gilvima-cula* Flint: Botosaneanu, 1996:12 [unidentified females].

This species, only recently described, is very closely related to *Ch. (Cu.) braconoides*. It is most easily

recognized by the paler, yellowish maculae on the forewings. It was recorded from the provinces of Azua, Dajabón, Duarte, El Seibo, Elías Piña, Hato Mayor, La Vega, Pedernales, Puerto Plata, San Cristóbal, San Juan, as well as Haiti. The new material currently available, here listed, adds only the Province of La Altagracia to its known distribution.

The unidentified female specimens mentioned by Botosaneanu (1996) from the Provinces of La Vega, Duarte and Pedernales have been examined. There is enough of the colored hair left on the wings, even though they are preserved in alcohol, to make a reasonably reliable determination that they are all *Ch. gilvamacula*.

Material Examined.—DOMINICAN REPUBLIC. [Duarte Province]: Cord. Septentrional, Loma Quita Espuela, Arroyo Los Guineos, 27 April 1995, L. Botosaneanu, light, 1♀ (ZMUA). Elías Piña Province: Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 46♂, 50♀ (FSCA). El Seibo Province: Pedro Sánchez, small stream, 10 June 1976, Woodruff, 9♂, 25♀ (FSCA, NMNH). La Altagracia Province: La Laguna Nisibón at Río Maimón, 18 June 1998, Woodruff & Freytag, 2♂, 2♀ (FSCA). 2 km E Nisibón, Río Nisibón, 12 June 1986, Woodruff & Stange, 62♂, 36♀ (FSCA, NMNH). Nisibón, Finca Papagallo, 16–19 June 1999, Woodruff & Baranowski, 1♂ (FSCA); same, but 4–8 April 2000, Woodruff & Henry, 3♂, 9♀ (FSCA, NMNH). [La Vega Province]: Cord. Central, Jarabacoa, Salto de agua Bayaguata, 10 May 1995, L. Botosaneanu, at light, 1♀ (ZMUA). Monseñor Nouel Province: Bonao, Río Yuna, 600 ft [ca. 180 m], 18 April 2000, Woodruff & Henry, 1♂ (FSCA). Pedernales Province: Río Mulito, 21 km N Pedernales, 270 m, 18°09.3'N, 71°45.6'W, 18 March 1999, Flint, 9♂, 17♀, plus 17 larvae, 1 prepupa, 1 pupa, 1♂ pupa (NMNH); same, but 20 March 1999, 6♂, 8♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 7♂, 1♀ (CMNH). Stream & falls, 19 km N Pedernales, 18°09.2'N, 71°44.8'W, 230 m, 19 March 1999, Flint & Mathis, 12♂, 20♀, plus 1 larva, 1 pupa, 1♂ metamorphotype (NMNH). Spring La Aguita, ca. 1.5 km from Mulito to Pedernales, 5 May 1995, L. Botosaneanu, 3♀ (ZMUA). San Cristóbal Province: La Trinidad, NE Sierra de Agua, 2 May 1978, Woodruff et al., 10♂, 5♀ (FSCA).

Chimarra (Chimarrita) merengue Blahnik

Chimarra (Chimarrita) merengue Blahnik, 1997:210, figs. 4A–E, G, H [♂, ♀].

This species is closely related to *Ch. (Ci.) maldonadoi* from Puerto Rico; the two seem to be rather systematically isolated from all other species in the subgenus. Originally described from a few specimens taken in the province of Dajabón, *C. merengue* is now recorded from the Provinces of La Vega and Monseñor Nouel.

Material Examined.—DOMINICAN REPUBLIC. Dajabón Province: 1.3 km S Loma de Cabrera, 400 m, 20–22 May 1973, D. & M. Davis, ♂ holotype, 1♂, 3♀ paratypes (NMNH). La Vega Province: 5 km SSE Jarabacoa, 640 m, 25 July 1987, J.E. Rawlins, 1♂ (CMNH). Near mouth Arroyo Los Dajos, 5 km E Manabao, 19°04'N, 70°45'W, 740 m, 9 Oct 1991, Rawlins et al., 1♀ (CMNH). Bayacanes, 120 m, 24 July 1987, Rawlins & Davidson, 1♂ (CMNH). La Vega–Monseñor Nouel Provinces, Loma el Casabito, summit, 19°03'N, 70°31'W, 1390 m, 19–23 November 1992, Rawlins et al., 3♀ (CMNH, NMNH).

Chimarra (Otarra) koki Botosaneanu

Chimarra koki Botosaneanu, 1996:11, figs. 7–12 [♂, ♀]. Blahnik, 2002:85 [relationships].

This recently described species is known from only a few localities in the Cordillera Central in the Provinces of La Vega, Monseñor Nouel and now Peravia.

Material Examined.—DOMINICAN REPUBLIC. Monseñor Nouel Province: nr. Jima [on road to Constanza], 670 m, 19°01.2'N, 70°28.8'W, 6 May 1995, Flint, 3♂, 1♀ paratypes. Peravia Province: tributary to upper Río Las Cuevas, 3 km SW La Nuez, 18°40'N, 70°36'W, 1870 m, 5–6 August 1990, Rawlins & Thompson, 2♂ (CMNH, NMNH).

Chimarra (Otarra) redonda Blahnik

Chimarra redonda Blahnik, 2002:98, figs. 25, 47 [♂, ♀]. Botosaneanu, 1996:11 [Dominican Republic].

This species has been formally described only recently, but its identity was known through the unpublished thesis of its author since 1996. The few records are from La Vega Province.

Material Examined.—DOMINICAN REPUBLIC. La Vega Province: La Palma, 12 km E El Río, 2–13 Jun 1969, Flint & Gomez, ♂ holotype, 16♂, 8♀ paratypes (NMNH).

Chimarra (Otarra) spinulifera spinulifera Flint

Chimarra (C.) spinulifera Flint, 1968:151, figs. 4–7 [♂]. Botosaneanu, 1996:11 [Dominican Republic]; Blahnik, 2002:107, fig. 31, [♂, redescription].

This, the nominotypic subspecies, is still known from only the unique holotype taken near the southwestern tip of Haiti.

Material Examined.—HAITI. [Département du Sud]: Roche Croix, Mt. La Hotte, 4000 ft. [ca. 1200 m], 14 Oct 1945, Darlington, ♂ holotype (MCZ).

Chimarra (Otarra) spinulifera galalcha Botosaneanu

Chimarra spinulifera galalcha Botosaneanu, 1996:11, figs. 13–18 [♂, ♀]. Blahnik, 2002:107, figs. 32, 50 [♂, ♀, redescription. Dominican Republic].

This is the form (species or subspecies?) of *C. spinulifera* that inhabits both the Cordilleras Central and Septentrional in the Dominican Republic. It can be rather common in some areas around Jarabacoa in the central highlands. The recorded material is from the Provinces of La Vega, Duarte, and Elías Piña.

Material Examined.—DOMINICAN REPUBLIC. Elías Piña Province: 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 2♂, 6♀ (NMNH). La Vega Province: Arroyo Guasara, 9.5 km W Jarabacoa, 680 m, 19°04.4'N, 70°42.1'W, 19 May 1995, Flint, 14♂, 2♀ paratypes (NMNH). Río Baiguata, 1–2 km S Jarabacoa, 520 m, 19°06.9'N, 70°37.0'W, 8–21 May 1995, Flint, 41♂, 56♀ paratypes (NMNH). 5 km S Jarabacoa [on road to El Río], 640 m, 19°05.8'N, 70°36.5'W, 8–20 May 1995, Mathis, 1♂ paratype (NMNH).

Chimarra (Otarra) spinulifera baoruco

Flint and Sykora, new subspecies

(Fig. 33)

Chimarra spinulifera spinulifera Flint: Botosaneanu, 1996:12 [Dominican Republic].

The nominotypic subspecies was described from a unique male from Mt. La Hotte in extreme southwestern Haiti. The subspecies *Ch. s. galalcha* was described by Botosaneanu (1996) from the Cordillera Central and the Loma Quita Espuela in Duarte Province. This new subspecies is known from only a small, spring-fed brook arising from the base of the Sierra de Baoruco. Except for the subspecies *Ch. s. galalcha*, which is known from a number of localities and in good numbers, the other subspecies are each known from only one or a few specimens from a single site. Additional material from other sites, especially the other mountain ranges, and longer series may show all to be a single, variable species, or may substantiate the validity of the various subspecies.

The differences among the three subspecies seems to lie wholly in the ornamentation of the tenth tergum of the male. In the nominotypic subspecies the tenth tergite bears a long, basolateral spine and another long spine, with a few shorter basomesal spinelets. In *Ch. s. galalcha* the basolateral spine is much shorter and the basomesal spine is reduced to a low, rounded knob. The subspecies *Ch. s. baoruco* again bears a long basolateral spine, but the basomesal spine is noticeably elongate, bifid or even multifid apically with the points variable in length. The females of the last two subspecies do not offer any clear-cut genitalic differences.

Adult Male.—Length of forewing, 3.5–4 mm. Color fuscous, immaculate. Genitalia: Eighth tergum slightly and broadly produced posteromesad. Ninth segment rounded anteriorly; with long, terete ventromesal process. Tenth tergite with long, basolateral spine and with elongate, basodorsal process bifid apically; lateral margin with several short spines; in dorsal aspect deeply divided mesally with lateral margin heavily sclerotized, mesally more membranous. Cercus large, earlike, flared laterad. Inferior appendage trianguloid in lateral aspect with apicodorsal extension broad in lateral aspect but slender in ventral. Phallus with phallosome slender, straight; phallosomal sclerites elongate, complex, lightly sclerotized.

Female.—Length of forewing, 4 mm. Color as in male. Genitalia: Eighth segment lacking anterolateral apodemes, deeply divided ventrolaterally; ventromesally with broad, truncate lobe. Ninth tergite with long, slender ventrolateral apodeme. Vaginal sclerites lightly sclerotized, inconspicuous.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, Barahona Province:** San Rafael, 8.3 km S Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 22 March 1999, Flint (NMNH). Paratypes: Same data, 2♂, 1♀ (NMNH, CMNH); same, but, 15 May 1995, 1♀ (NMNH). S. de Baoruco, Arroyo San Rafael, 5 Apr 1995, L. Botosaneanu, light, 1♂ (ZMUA).

Family Polycentropodidae
Genus *Antillopsyche* Banks

This is the only known New World genus belonging to the subfamily Pseudoneureclipsinae, which is otherwise

known only from the Old World tropics. Two species are known from Cuba, one from Puerto Rico, and one extant species from the Dominican Republic. In addition, the species *A. oliveri* Wichard (1985) is the most frequently encountered caddisfly in Dominican amber. The larva, pupa, and retreat were described for the Puerto Rican *A. tubicola* (Flint, 1964).

Antillopsyche demma Botosaneanu

Antillopsyche demma Botosaneanu, 1996:13, figs. 22–26 [♂].

Although presently known from only the Dominican Republic, it has been taken close to the Haitian border near Pedernales. It is known from the Provinces of Dajabón, Elias Piña, Hato Mayor, Pedernales, and La Vega as well as the site, “S. Francisco Mts.” in San Cristobal Province.

Material Examined.—**DOMINICAN REPUBLIC, Dajabón Province:** 13 km S Loma de Cabrera, ca. 400 m, 20–22 May 1973, D. & M. Davis, 1♀ (NMNH). **Elias Piña Province:** Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 4♀ (FSCA). **Hato Mayor Province:** Parque Los Haitises, E of Trepada Alta, 12 km W El Valle, 18°59'N, 69°30'W, 145 m, 6 July 1992, Rawlins et al., 1♂, 4♀ (CMNH). **La Vega Province:** Jarabacoa, 3–4 June 1969, Flint & Gómez, 3♀ (NMNH). Bayacanes, 120m, 24 July 1987, Rawlins & Davidson, 1♂ (CMNH). **Pedernales Province:** Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 1♀ (NMNH); same, but 18 March 1999, 4♂, 7♀ (NMNH); same, but 20 March 1999, 1♂, 15♀ (NMNH); same, but 13 km N Pedernales, 18°09'N, 71°46'W, 17 July 1992, 230 m, Rawlins et al., 45♂, 36♀ (CMNH, FSCA). Km 21, N Cabo Rojo, 1200 ft [365 m], 19 June 1976, Woodruff, 1♀ (FSCA). [**San Cristobal Province:** at or near Naranjo Dulce, 13 km N San Cristobal], S. Francisco Mts., Sept 1905, Aug. Busck, 3♂ paratypes, 2♀ (NMNH).

Genus *Cernotina* Ross

The genus is found throughout the New World from the northern United States south to the Río de la Plata. It has been found on all the Greater and some of the Lesser Antillean islands. A single species is known from Hispaniola and the genus has been recorded also from Dominican amber (Wichard, 1987). The larva of the Puerto Rican *C. mastelleri* Flint was described (Flint, 1964) as Polycentropodinae species.

Cernotina danieli Flint and Sykora, new species
(Fig. 34)

Cernotina sp. Flint & Perez-Gelabert, 1999:43 [erroneously listed as ♂, recte ♀].

This uncommon species is closely related to the Jamaican *C. caliginosa* Flint and more distantly to the Puerto Rican *C. mastelleri* Flint. With both it shares the absence of the dorsal process of the inferior appendage and with *C. caliginosa* it agrees in the shape of the intermediate and inferior appendages. There are small but distinct differences between the two in the exact contour of the inferior appendages, but the primary differences are seen in the ventromesal lobes of the intermediate appendages. In ventral aspect this lobe is

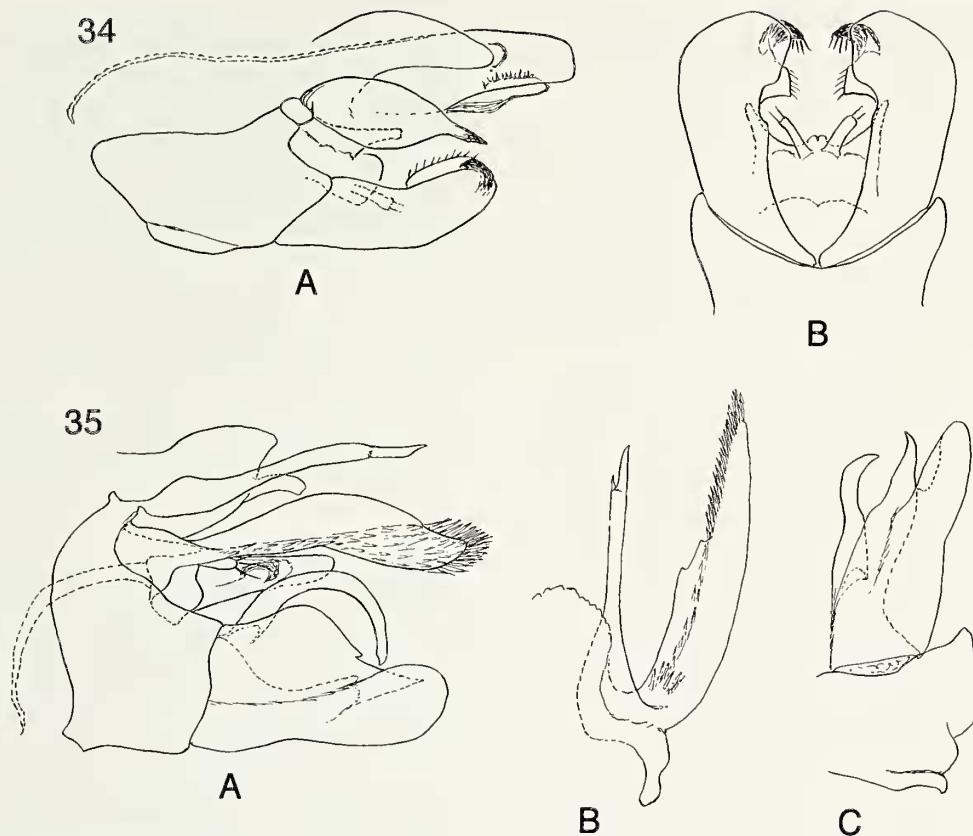


Fig. 34.—*Cernotina danieli* new species, male genitalia: A, Lateral. B, Ventral.

Fig. 35.—*Polycentropus pedernales* new species, male genitalia: A, Lateral. B, Tenth tergum and preanal appendage, dorsal. C, Ninth sternum and inferior appendage, ventral.

truncate with a small mesal cleft in *C. caliginosa*, but in *C. danieli* this lobe bears two pairs of processes, one submesally the other posterolaterally. The female described here is associated with the male based purely on supposition. But its genitalia are virtually identical to those of the Jamaican species (see Flint, 1968a, fig. 36), as would be expected based on the similarity of the males.

Adult Male.—Length of forewing, 4.5 mm. Color brown in alcohol. Genitalia: Ninth segment with anterior margin produced anteriorly, rounded. Tenth tergum elongate, membranous, divided dorsomesally. Preanal appendage wide basally, tapering abruptly to darkened, narrow, pointed apex directed mesad; ventromesal lobe bearing pair of dorsolateral processes, pair of ventromesal, tubular processes, and mesal lobe, rounded in lateral aspect. Inferior appendage lacking basodorsal lobe; with apicodorsal, blackened hook and low dorsomesal lobe with row of small spinose setae. Phallus with long, dorsal, rodlike sclerite, apicoventrally with recurved, ribbonlike sclerite, internally with plate bearing small teeth and c-shaped sclerite.

Female.—Length of forewing, 4 mm. Color light, golden-brown; hair on head and thorax mesally, white;

forewings light, golden-brown. Genitalia: Lobes of eighth sternum long and narrow, internally with linear, V-shaped sclerite extending length of segment with point at base of ninth segment. Ninth segment with darkened, V-shaped vaginal entrance basomesally on venter. Vaginal sclerite circular, with round, central opening placed mesally near base of eighth segment.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC, Pedernales Province:** Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al. (CMNH). Paratypes: Same data, 1♂ (NMNH). [**San Cristobal Province:** at or near Naranjo Dulce, 13 km N San Cristobal], S. Francisco Mts., Sept 1905, Aug. Busck, 1♀ (NMNH).

Genus Polycentropus Curtis

This genus is worldwide in distribution, and found in all regions of the New World. It is well represented on the Greater Antillean islands with four species described from Cuba, one each from Jamaica and Puerto Rico, and now five from Hispaniola. The abundant new material has permitted the certain association of males and females, thus adding females to some previously recorded species. The larvae are well known, with the Puerto Rican

P. zaneta (Flint, 1964) and the Jamaican *P. jamaicensis* (Flint, 1968a) described.

Polycentropus domingensis Banks

Polycentropus domingensis Banks, 1941:399, figs. 18, 19, 23 [♂]. Flint, 1967:6, fig. 21 [lectotype, ♂]; Flint, 1976:237, figs. 7–8 [♂]; Hamilton, 1988:175, fig. 7.18 [♂].

New material from the Central Cordillera has contained examples of this, the first described species of the genus from Hispaniola. The original types came from the Province of La Vega and we now add the Province of Peravia.

Material Examined.—**DOMINICAN REPUBLIC. Peravia Province:** upper Río Las Cuevas, 3 km SW La Nuez, 18°40'N, 70°36'W, 1880 m, 5–6 August 1990, Rawlins & Thompson, 10♂ (CMNH, NMNH); same, but 2 September 1995, Rawlins et al., 1♂, 1♀ (CMNH); same, but 5–6 October 1991, 9♂ (CMNH, NMNH). **La Vega Province:** Reserva Científica Valle Nuevo, Sector La Nevera, 3 km WNW La Nuez, 18°42'N, 70°36'W, 2200 m, 7 October 1992, Rawlins et al., 3♂ (CMNH, NMNH). Near Alto Bandera Pass, Res. Sta. Fund. Moscoso Puello, 2400 m, 8–9 May 2001, Woodruff & class, 1♂ (FSCA). Loma Rucilla, 8–10,000 ft [2440–3050 m], June '38 [1938], Darlington, ♂ lectotype, 2♂, 1♀ paratypes (MCZ). Valle Nuevo, SE Constanza, c. 7,000 ft. [2135 m], Aug. '38, Darl.[ington], 6♂, 1♀ paratypes (MCZ).

Polycentropus jeldesi Flint

Polycentropus jeldesi Flint, 1976:237, figs. 9–10 [♂]. Hamilton, 1988:173, fig. 7.16 [♂].

Polycentropus species 2 Flint, 1976:239, fig. 19 [♀]. **New synonym.** *Polycentropus* "sp.A" Botosaneanu, 1996:15, figs.29–30 [♀]. **New synonym.**

This species has proven to be the most abundant in the new material here recorded. The associated females permit the firm placement of species 2 (Flint, 1976) and sp. A (Botosaneanu, 1996) as females of this species. It was originally described from La Vega Province; the new material extends its range into the Sierra de Neiba in the Province of Independencia and further along the Cordillera Central into Peravia and Elias Piña Provinces and to the border with the Province of Monseñor Nouel.

Material Examined.—**Dominican Republic. Elias Piña Province:** 4 km SE Río Limpio, ca. 760 m, 24–25 May 1973, D. & M. Davis, 1♀ (NMNH). **Independencia Province:** Sierra de Neiba near crest, 5.5 km NNW Angel Feliz, 18°41'N, 71°47'W, 1750 m, 21–22 July 1992, Rawlins et al., 11♂ (CMNH, NMNH); same but just south of crest, 5 km NNW Angel Feliz, 1780 m, 13–15 October 1991, 1♂ (CMNH). **La Vega Province:** Convento, 12 km S. of Constanza, 6–13 June 1969, Flint & Gómez, ♂ holotype, 6♀ (NMNH); same, but 18°51.5'N, 70°41.9'W, 1400 m, 6 May 1995, Flint, 1♀ (NMNH). 11.5 km S of Constanza (1 km N El Convento), 18°51.7'N, 70°41.0'W, 1410 m, 27 March 1999, Flint, 2♂, 40♀, many larvae, pupae, ♀ metamorphotypes (NMNH). Constanza, 8 November 1984, Spangler et al., 3♂ (NMNH). Cord. Central, Constanza-El Convento; Salto Agua Blanca, 11 May 1995, L. Botosaneanu, light, 3♀ (ZMUA). Cord. Central, Parque Nac. A. Bermudez, Arroyo M. Estrella, 25 April 1995, L. Botosaneanu, light, 1♀ (ZMUA). 2.5 km SW Piñar Bonito, 18°51'N, 70°43'W, 1430 m, 26 November 1992, Rawlins et al., 5♂, 13♀ (CMNH, NMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, R.E. Woodruff, 3♂, 9♀ (FSCA); same, but 20–21 April 2000, Woodruff & Henry, 1♂ (FSCA). **La Vega-Monseñor Nouel Provinces:** Loma el Casabito, summit, 19°03'N, 70°31'W, 1390 m, 19–23 November 1992, Rawlins et al., 83♂,

21♀ (CMNH, NMNH). **Monseñor Nouel Province** [not La Vega as labelled]; 6 km [not mi as labelled] NW of Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 4♀ (FSCA). 1 km E Paso alto de Casabito, 7 km NW la Ceiba, 19°02'N, 70°29'W, 1130 m, 28 July 1992, Rawlins et al., 3♂, 10♀ (CMNH). Paso alto de Casabito, 8 km NW la Ceiba, 19°02'N, 70°29'W, 1280 m, 28 July 1992, Rawlins et al., 3♂, 3♀ (CMNH). **Peravia Province:** upper Río Las Cuevas, 3 km SW La Nuez, 18°40'N, 70°36'W, 1880 m, 5–6 August 1990, Rawlins & Thompson, 17♂, 10♀ (CMNH, NMNH); same, but 2 September 1995, Rawlins et al., 1♂ (CMNH); same, but 5–6 October 1991, 13♂, 10♀ (CMNH, NMNH).

Polycentropus marcanoi Flint

Polycentropus marcanoi Flint, 1976:238, figs. 11, 12, 18 [♂, ♀]. Hamilton, 1988:171, fig. 7.14 [♂].

This is a rather widespread species on the lower hills and mountains. It was originally described from the Provinces of Dajabón, El Seibo, and Elias Piña. The provinces of La Vega and Puerto Plata are here added.

Material Examined.—**DOMINICAN REPUBLIC. Dajabón Province:** 9 km S Loma de Cabrera, 19°21'N, 71°37'W, 620 m, 12 July 1992, Rawlins et al., 1♂ (CMNH). **El Seibo Province:** Loma Cocuyo, 6 km N Pedro Sánchez, 18°55'N, 69°07'W, 475 m, 4 July 1992, Rawlins et al., 1♀ (CMNH). 7 mi [ca. 11 km] N Pedro Sánchez, Loma de Chivo, 5000 ft [1525 m], 20 June 1998, Woodruff & Freytag, 2♀ (FSCA). **La Vega Province:** 5 km SSE Jarabacoa, 640 m, 25 July 1987, Rawlins, 1♂ (CMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, R.E. Woodruff, 1♂, 2♀ (FSCA). **Monseñor Nouel Province** [not La Vega as labelled]; 6 km [not mi as labelled] NW of Rt.1 on road to Constanza, 27 June 1998, Woodruff & Baranowski, 2♂ (FSCA). **Puerto Plata Province:** Pico El Murazo, N slope near summit, 19°41'N, 70°57'W, 910 m, 28 November 1992, Rawlins et al., 4♂, 3♀ (CMNH, NMNH). **San Juan Province:** 7 km N Arroyo Caño, 1 km S Los Frios, 18°52'N, 71°01'W, 1120 m, 1 September 1995, Rawlins et al., 1♂ (CMNH).

Polycentropus pedernales
Flint and Sykora, **new species**
(Fig. 35)

Polycentropus "sp.B" Botosaneanu, 1996:15, figs. 31–34 [♀]. **New synonym.**

This, the smallest species yet taken on Hispaniola, seems limited to foothills and mountains of the Sierra de Baoruco. It seems to be the species ancestral to *P. marcanoi* in that the preanal appendage is elongate and bears specialized setae ventrally, and has the preanal and intermediate appendages approximate at the base. However *P. pedernales* lacks the small, mesal, spinose process from the inner face of the intermediate appendage seen in *P. marcanoi* and the vertical brace of the inferior appendage slopes evenly almost to the tip of the ventral lobe and it bears a spur at the junction with the ventral lobe.

Adult Male.—Length of forewing, 6.5–7 mm. Color dark brown, venter, legs, antennae stramineous; forewing brown with many spots of golden hair scattered overall, but largest on anterior wing margin. Genitalia: Ninth segment with slightly sinuate anterior margin. Tenth tergum lightly sclerotized ventrally, with elongate ventromesal lobe. Preanal appendage long, slender,

slightly arched; bearing on ventral and apicomeral surface short, specialized setae. Intermediate appendage lacking mesal process, with subapical excision bearing seta mesally. Inferior appendage with dorsal appendage long, curved ventrad apically; vertical brace long, tapering nearly to apex of ventral lobe, posterior tooth displaced to mesal face of ventral lobe; ventral lobe rounded apically, barely extending beyond posterior tooth. Phallus lightly sclerotized, with a small, curled sclerite internally.

Female.—Length of forewing, 7–8 mm. Color as in male. Genitalia: Lobes of eighth sternum small, nearly circular in outline. Ninth sternum trilobate, lateral lobes as long as broad, quadrate in outline, mesal lobe broad, posterior margin produced and angulate mesally. Vaginal sclerites consisting of posterolateral, pouchlike lobes and anteromesad rounded sclerite with rimmed central opening.

Type Material.—Holotype, male: **DOMINICAN REPUBLIC**. **Pedernales Province**: along Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, riparian woodland, J. Rawlins, S. Thompson, C. Young, R. Davidson (CMNH). Paratypes: Same data 8♂, 18♀ (CMNH, NMNH); same, but 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, O.S. Flint. 5♀ (NMNH, CMNH); same, but 18 March 1999, 2♂, 7♀, 1♂ metamorphotype (NMNH); same, but 20 March 1999, 16♀ (NMNH). Stream & falls, 19 km N Pedernales, 230 m, 18°09.2'N, 71°44.8'W, 19 March 1999, O.S. Flint, 7♀, 1♂ metamorphotype (NMNH). 23.5 km N Cabo Rojo, 18°06'N, 71°38'W, 540 m, 26–27 September 1991, wet deciduous forest, J. Rawlins, S. Thompson, C. Young, R. Davidson, 1♀ (CMNH). Sierra de Baoruco, Río Mulito 2 km from Mencia de Pedernales, 5 May 1995, L. Botosaneanu, light, 3♀ (ZMUA). **Barahona Province**: Larimar Mine, nr. Filipinas, 26 June–7 July 1992, R. Woodruff & P. Skelley, 3♂, 1♀ (FSCA, NMNH). Sierra de Baoruco, Arroyo San Rafael, 4 May 1995, L. Botosaneanu, light, 1♀ (ZMUA).

Polycentropus vanderpooli Flint

Polycentropus vanderpooli Flint, 1976:237, figs. 5, 6 [♂]. Hamilton, 1988:176, fig. 7.19 [♂]; Botosaneanu, 1996:15, figs. 27, 28 [Dominican Republic, ♀].

Originally described from La Vega and Elias Piña provinces, it was later recorded from another locality in La Vega and its female also described (Botosaneanu, 1996). The new material extends its range greatly in the Provinces of Azua, Baoruco, Independencia, Pedernales, and the Distrito Nacional.

Material Examined.—**DOMINICAN REPUBLIC**. **Azua Province**: Río Las Cuevas, 8 km NE Padre Las Casas, 18°46'N, 70°53'W, 580 m, 3–4 October 1991, Rawlins et al., 2♀ (CMNH). **Baoruco Province**: Sierra de Neiba, Los Guineos on upper Río Colorado, 18°35'N, 71°11'W, 630 m, 11–12 August 1990, Rawlins & Thompson, 4♂, 3♀ (CMNH). [**Distrito Nacional**]: Cachón de la Rubia, nr. Central Ozama, 10 June 1969, Flint & Gómez, 1♀ (NMNH). **Elias Piña Province**: Río Limpio, 2400 ft [ca. 730 m], 26–27 April 2000, Woodruff & Henry, 3♂, 7♀ (FSCA). **Independencia Province**: Loma de Vientos, 4 km S Los Pinos, 18°35'N, 71°46'W, 475 m, 12 October 1991, Rawlins et al., 2♀ (CMNH); same, but 23 July 1992, 1♀ (CMNH). Río Guyabal, 4.5 km N Postrer Río, 150 m, 18°34.7'N, 71°37.7'W, 25 March 1999, Flint, 1♂, 2♀ (NMNH). **La Vega Province**: near mouth Arroyo Los Dajaos, 5 km E Manabao, 19°04'N, 70°45'W, 740 m, 9 October 1991, Rawlins et al., 1♀ (CMNH). 5 km SSE Jarabacoa, 640 m, 25 July 1987, Rawlins, 2♂

(CMNH, NMNH). La Ciénega de Manabao, Park Headquarters, 3–5 July 1999, Woodruff, 1♂ (FSCA). La Ciénega, Río Yaque del Norte, 19°51.68'N, 70°51.68'W, 3640 ft. [ca. 1110 m], 29 July 1999, Peralta, 1♂, 1♀ (NMNH). **Pedernales Province**: 1 km S Los Arroyos, 18°14'N, 71°45'W, 1125 m, 18 October 1991, Rawlins et al., 1♂ (CMNH). Río Mulito, 21 km N Pedernales, 18°09.3'N, 71°45.4'W, 280 m, 6 May 1995, Flint, 1♀ (NMNH); same, but 18 March 1999, Flint, 3♂, 1♀ (NMNH); same, but 20 March 1999, 3♂, 7♀ (NMNH).

Family Xiphocentronidae Genus *Xiphocentron* Brauer

The genus *Xiphocentron* has been found from the southwestern United States, south to west central Argentina, including all the Greater and most of the Lesser Antilles. Most of the species are quite similar in appearance, especially those from the Greater Antilles, leading to a good deal of confusion in the taxonomic status of the various forms. The larvae, pupae, and tubular nets of *X. haitiense* from Puerto Rico were described by Flint (1964), and the larva and net of *X. messapus* from Texas by Wiggins (1996).

Xiphocentron (Antillotrichia) haitiense (Banks)

Antillotrichia haitiensis Banks, 1941:402, figs. 35, 36 [♂].

Xiphocentron haitiensis (Banks): Flint, 1964:26, figs. 5A–B, E, 6A–N [♂, ♀, larva, pupa, biology].

Xiphocentron (Antillotrichia) cubanum haitiense (Banks): Botosaneanu, 1996:12 [♂].

We have material in series from several sites in southeastern Dominican Republic which we have compared with the type and Puerto Rican examples of *X. haitiense* and Cuban examples of *X. cubanum*. There are several very clear and distinctive differences between the Cuban and Hispaniolan–Puerto Rican material that lead us to consider these to be distinct species. In *X. haitiensis* the anterior margin of the ninth sternum is truncate with perhaps a very small point from its ventral angle, in the *X. cubanum* the anterior margin tapers into a point that may be blunt or sharp. The posteroventral margin the ninth segment is distinctly emarginate mesally; in the *X. cubanum* this area is either nearly transverse with a pair of small, submesal angles or is produced. The anteromesal region of the tenth tergum is barely emarginate in *X. haitiensis*, but cleft for at least half its length in the Cuban. The ventral margin of the inferior appendage in lateral aspect is distinctly constricted near its base in *X. haitiense* but regularly tapering in *X. cubanum*. The type of *X. cubanum* (in which only the base of all the appendages is left) agrees in the shape of the anterior and posterior margins of the ninth sternum, anterior margin of the tenth tergum, and base of the inferior appendage.

The species is known from the type from Haiti, and recorded from Puerto Rico and Pedernales Province in the Dominican Republic. We here add the provinces of Barahona and Independencia.

Material Examined.—**DOMINICAN REPUBLIC**. **Barahona Province**: San Rafael, 8.3 km S Baoruco, 18°01.9'N, 71°08.4'W, 30 m, 15 May 1995, Flint, 10♀ (NMNH). **Independencia Province**: Río Las Damas, 2 km S Duvergé, 10 m, 18°22.0'N, 71°31.4'W, 24 March 1999, Flint & Mathis, 6♂, 1♀ (NMNH). La Descubierta, 0 m, 18°34.1'N, 71°43.8'W, 25 March 1999, Flint, 2♀ (NMNH). Río Guyabal, 4.5 km N Postre Río, 150 m, 18°34.7'N, 71°37.7'W, 25 March 1999, Flint, 1♂, 1♀ (NMNH). **Pedernales Province**: along Río Mulito, 13 km N Pedernales, 18°09'N, 71°46'W, 230 m, 17 July 1992, Rawlins et al., 114♂, 16♀ (CMNH, FSCA); same, but 21 km N Pedernales, 18°09.3'N, 71°45.6'W, 280 m, 14 May 1995, Flint, 9♂ (NMNH); same, but 18 March 1999, Flint, 1♂, 1♀ (NMNH); same, but 20 March 1999, Mathis, 1♂ (NMNH). Sierra de Baoruco, Río Mulito, 2 km from Mencia de Pedernales, 5 May 1995, L. Botosaneanu, light, 1♂ (ZMUA).

HAITI. [Département du Sud]: Camp Perrin, nr 1000 ft [305 m], 8–27 Oct 1934, Darlington, ♂ holotype (MCZ).

PUERTO RICO. Dona Juana, Toro Negro Forest, 23–24 June 1969, Flint, 1♂, 6♀ (NMNH).

Xiphocentron species

Material of a second species from the Cordillera Central is available, but only in the female sex. It differs strongly in coloration from *X. haitiense*: the forewing is black with silver spots, one on the anterior margin, two on the posterior margin and small, silver dots along the apical margin. *Xiphocentron haitiense* is brown with irregular pale brown maculae. Considering the small differences in the male genitalia between species in this genus, we leave it undescribed for now.

Material Examined.—**DOMINICAN REPUBLIC**, **Monseñor Nouel Province**: near Jima [6.3 km W jct. Carretera Duarte and rt. 12], 19°01.2'N, 70°28.8'W, 670 m, 6 May 1995, Flint, 1♀ (NMNH). **La Vega Province**: near Agua Blanca, 13.7 km SE Constanza, 18°51.6'N, 70°41.9'W, 1505 m, 7 May 1995, Flint, 1♀ (NMNH).

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APPENDIX I

Checklist of the known Hispaniolan Trichoptera, with their known distributions

Family Calamoceratidae

1. *Phylloicus iridescens* Banks, Dominican Republic.
2. *Phylloicus pulchrus* Flint, Puerto Rico, Dominican Republic.

Family Ecnomidae

3. *Austrotinodes labiatus* new species, Dominican Republic.

Family Glossosomatidae

4. *Campsiophora pedophila* Flint, Puerto Rico, Dominican Republic, Haiti.

5. *Cariboptila aurulenta* Flint, Dominican Republic.

6. *Cariboptila caab* Botosaneanu, Dominican Republic.

7. *Cariboptila calcigena* Flint, Dominican Republic.

8. *Cariboptila hispaniolica* Flint, Dominican Republic.

9. *Cariboptila matlusi* new species, Dominican Republic.

10. *Cariboptila paradoxa* new species, Dominican Republic.

Family Helicopsychidae

11. *Helicopsyche (Feropsyche) altercoma* Botosaneanu and Flint, Dominican Republic.

12. *Helicopsyche (Feropsyche) dominicana* Botosaneanu and Flint, Dominican Republic.
 13. *Helicopsyche (Feropsyche) parahageni* new species, Dominican Republic.
 14. *Helicopsyche (Feropsyche) haitiensis* Banks, Haiti.
 15. *Helicopsyche (Feropsyche) kalaom* Botosaneanu, Dominican Republic.
 16. *Helicopsyche (Feropsyche) lutea* (Hagen), Dominican Republic.
 17. *Helicopsyche (Feropsyche) nigrisensilla* Botosaneanu and Flint, Dominican Republic.
 18. *Helicopsyche (Feropsyche) melanochaeta* new species, Dominican Republic.
 19. *Helicopsyche (Feropsyche) poliochaeta* new species, Dominican Republic.
 20. *Helicopsyche (Feropsyche) septifera* new species, Dominican Republic.
- Family Hydrobiosidae
21. *Atopsyche batesi* Banks, Haiti.
 22. *Atopsyche conventica* Flint, Dominican Republic.
 23. *Atopsyche davisorum* Flint, Dominican Republic.
 24. *Atopsyche himulus* new species, Dominican Republic.
 25. *Atopsyche lilicae* Botosaneanu, Haiti.
 26. *Atopsyche orientalis* new species, Dominican Republic.
 27. *Atopsyche peravia* new species, Dominican Republic.
 28. *Atopsyche taina* Flint, Dominican Republic.
 29. *Atopsyche thomasi* new species, Haiti.
 30. *Atopsyche* species, ♀, Dominican Republic.
 31. *Atopsyche* species, ♀, Haiti.
- Family Hydropsychidae
32. *Calosopsyche batesi* (Flint), Haiti.
 33. *Calosopsyche bohio* (Botosaneanu), Haiti.
 34. *Calosopsyche carinifera* (Flint), Dominican Republic.
 35. *Calosopsyche domingensis* (Banks), Dominican Republic.
 36. *Macronema* species, larva, Haiti.
 37. *Streptopsyche antilles* (Ross and Palmer), Dominican Republic, Haiti.
 38. *Streptopsyche davisorum* Ross and Unzicker, Dominican Republic.
 39. *Streptopsyche parander* (Botosaneanu), Dominican Republic.
 40. *Streptopsyche rawlini* new species, Haiti.
 41. *Streptopsyche praecipua* new species, Haiti.
 42. *Smicridea (Smicridea) brunnescens* new species, Dominican Republic.
 43. *Smicridea (Smicridea) comma* Banks, Cuba, Dominican Republic.
 44. *Smicridea (Smicridea) banksi* Flint, Haiti, Dominican Republic.
 45. *Smicridea (Smicridea) completa* Banks, Dominican Republic.
 46. *Smicridea (Smicridea) duarte* new species, Dominican Republic, Haiti.
 47. *Smicridea (Smicridea)* species, ♀, Dominican Republic.
- Family Hydroptilidae
48. *Alisotrichia aglae* Botosaneanu, Haiti, Dominican Republic.
 49. *Alisotrichia aquaeacantis* Botosaneanu, Haiti, Dominican Republic.
 50. *Alisotrichia arcana* Botosaneanu, Haiti.
 51. *Alisotrichia bisetosa* new species, Dominican Republic.
 52. *Alisotrichia euphrosyne* Botosaneanu, Haiti, Dominican Republic.
 53. *Alisotrichia hiruopsis aitija* Botosaneanu, Dominican Republic.
 54. *Alisotrichia hispaniolina* Botosaneanu, Haiti, Dominican Republic.
 55. *Alisotrichia thalia* Botosaneanu, Haiti, Dominican Republic.
 56. *Alisotrichia woodruffi* new species, Dominican Republic.
 57. *Alisotrichia ultima* new species, Dominican Republic.
 58. *Hydroptila ditalea* Flint, Jamaica, Dominican Republic, Mexico to Peru.
 59. *Hydroptila dominicana* Botosaneanu, Dominican Republic, Cuba.
 60. *Hydroptila medinae* Flint, Puerto Rico, Dominican Republic, Haiti, Cuba.
61. *Leucotrichia gomezi* Flint, Dominican Republic.
 62. *Leucotrichia tubifex* Flint, Puerto Rico, Dominican Republic, Haiti, Jamaica.
 63. *Metricchia cafetalera* Botosaneanu, Cuba, Dominican Republic.
 64. *Metricchia fontismoreaui* (Botosaneanu), Haiti, Dominican Republic.
 65. *Metricchia kunanskii* (Botosaneanu), Haiti, Dominican Republic.
 66. *Metricchia longispina* new species, Dominican Republic.
 67. *Metricchia squamigera* Flint, Puerto Rico, Dominican Republic.
 68. *Metricchia* species, ♀, Haiti.
 69. *Neotrichia iridescens* Flint, Puerto Rico, Dominican Republic, Cuba, Jamaica, Guadeloupe to St. Lucia.
 70. *Neotrichia bifurcata* Harris, new species, Dominican Republic.
 71. *Neotrichia pequenita* Botosaneanu, Cuba, Dominican Republic, Haiti, Jamaica, Barbados, Trinidad.
 72. *Neotrichia* species, ♀, Haiti.
 73. *Ochrotrichia baorucoensis* new species, Dominican Republic.
 74. *Ochrotrichia cachonera* Botosaneanu, Dominican Republic.
 75. *Ochrotrichia ingloria* Botosaneanu, Dominican Republic.
 76. *Ochrotrichia larimar* new species, Dominican Republic.
 77. *Ochrotrichia obovata* new species, Dominican Republic.
 78. *Ochrotrichia seiba* new species, Dominican Republic.
 79. *Ochrotrichia serra* Botosaneanu, Haiti.
 80. *Ochrotrichia verda* Flint, Puerto Rico, Dominican Republic.
 81. *Ochrotrichia* species A, ♀, Dominican Republic.
 82. *Ochrotrichia* species B, ♀, Dominican Republic.
 83. *Orthotrichia aegerfasciella* (Chambers), USA, Dominican Republic, Cuba, Haiti, Canada to Panama.
 84. *Orthotrichia cristata* Morton, USA, Dominican Republic, Cuba, Jamaica, Canada to Florida and Texas.
 85. *Oxyethira (Mesotrichia) albaequae* Botosaneanu, Dominican Republic.
 86. *Oxyethira (Dampftrichia) nirebalina* Botosaneanu, Haiti, Dominican Republic.
 87. *Oxyethira (Mesotrichia) geminata* new species, Dominican Republic, Haiti.
 88. *Oxyethira (Mesotrichia) ortizorum* Botosaneanu, Dominican Republic.
 89. *Oxyethira (Mesotrichia) scopulina* new species, Dominican Republic.
 90. *Oxyethira (Dampftrichia) cirrifera* Flint, Puerto Rico, Dominican Republic, Cuba, Haiti, Jamaica, Dominica, Martinique.
 91. *Oxyethira (Loxotrichia) janella* Denning, USA, Dominican Republic, Cuba, Haiti, Jamaica, Puerto Rico, Guadeloupe, Dominica, southern USA to Costa Rica.
 92. *Oxyethira (Loxotrichia) puertoricensis* Flint, Puerto Rico, Dominican Republic, Cuba, Haiti, Jamaica.
 93. *Oxyethira (Dampftrichia) simulatrix* Flint, Jamaica, Dominican Republic, Cuba, Haiti, Mexico to Panama.
 94. *Oxyethira (Dampftrichia) tega* Flint, Jamaica, Dominican Republic, Cuba, Haiti, Jamaica, Guadeloupe, Dominica.
 95. *Oxyethira (Mesotrichia)* species, ♀, Dominican Republic.
- Family Leptoceridae
96. *Nectopsyche cubana* (Banks), Cuba, Dominican Republic, Haiti, Jamaica, Puerto Rico.
 97. *Oecetis inconspicua* (Walker), USA, Dominican Republic, Cuba, Haiti, Jamaica, Puerto Rico, Trinidad, Canada to north South America.
 98. *Oecetis haitises* new species, Dominican Republic.
 99. *Setodes anomalus* new species, Dominican Republic.
- Family Odontoceridae
100. *Marilya gracilis* Banks, Haiti.
 101. *Marilya nigrescens* Banks, Dominican Republic.
 102. *Marilya valga* new species, Dominican Republic.
- Family Philopotamidae
103. *Chimarra (Curgia) braconoides* (Walker), Dominican Republic, Haiti.

104. *Chimarra (Curgia) gilvamacula* Flint, Dominican Republic, Haiti.
105. *Chimarra (Chimarrita) merengue* Blahnik, Dominican Republic.
106. *Chimarra (Otarra) koki* Botosaneanu, Dominican Republic.
107. *Chimarra (Otarra) redonda* Blahnik, Dominican Republic.
108. *Chimarra (Otarra) spinulifera spinulifera* Flint, Haiti.
109. *Chimarra (Otarra) spinulifera galalcha* Botosaneanu, Dominican Republic.
110. *Chimarra (Otarra) spinulifera baoruco* new species, Dominican Republic.
- Family Polycentropodidae
111. *Antillopsyche demna* Botosaneanu, Dominican Republic.
112. *Cernotina danieli* new species, Dominican Republic.
113. *Polycentropus domingensis* Banks, Dominican Republic.
114. *Polycentropus jeldesi* Flint, Dominican Republic.
115. *Polycentropus marcanoi* Flint, Dominican Republic.
116. *Polycentropus pedernales* new species, Dominican Republic.
117. *Polycentropus vanderpooli* Flint, Dominican Republic.
- Family Xiphocentronidae
118. *Xiphocentron (Antillotrichia) haitiense* (Banks), Haiti, Dominican Republic, Puerto Rico.
119. *Xiphocentron (Antillotrichia)* species, ♀, Dominican Republic.